ARROWBROOK CENTRE

CONCEPTUAL / FINAL DEVELOPMENT PLAN

RZ/FDP 2002-HM-043; PCA 79-C-037-5

NOTES

1. The subject property is located on Fairfax County Tax Assessment map 16-3 ((1)) Parcels 4B, 4C, 5, 5A and 39A. The property consists of 53.84± acres (2,345,461± SF) and is zoned R-1 (Parcels 5,5A,39A) and I-4 (Parcels 4B and 4C). This CDP/FDP accompanies application to rezone the property to the PDC, Planned Development Commercial District and a PCA (79-C-037) to delete land area (Parcels 4B & 4C totaling 3.55 acres). Parcels 4B,4C,5 and 39A are in the names of L. Farnum Johnson, Jr. and Jeffrey J. Fairfield, Managing Co-Trustees of the Ruth C. Launders Marital Trust, as recorded in Deed Book 12488 at Page 1819. Parcel 5A is in the names of David I. Meiselman and Winifred C. Meiselman, Trustees and the Meiselman Family L.L.C. as recorded in Deed Book 8002 at Page 576, as corrected in Deed Book 8200 at Page 636, and in Deed Book 10332 at Page 1873, and in Deed Book 11254 at Page 1394 and Deed Book 11254 at Page 1396, all among the land records of Fairfax County, Virginia.

Existing zoning and land uses adjacent to the site are:
West: I-4 Use: Office, Hotel
North: R-3, C-8 Use: School, Hotel
East: PDC, C-8, PDH-30, C-6 Use: Commercial, Multi-Family Resid., Hotel
South: PDC, PDH-12 Use: Undeveloped

2. The boundary information is from a boundary survey by PHR+A. Topographic information is from aerial survey. The contour interval is two (2) feet.

3. The subject property is partially undeveloped; there are residences and accessory structures on Parcels 39A and 5A. The existing improvements were built between 1900 and 1952 and all structures except those on Parcel 5A will be demolished when construction commences on the proposed development program.

4. The plan has been prepared with the benefit of a title report furnished by Stewart Title Guaranty Company, Commitment No. C-9912-1442970, effective June 1, 1999 and therefore, this plat does not necessarily indicate all encumbrances in the property from that date. A sanitary sewer easement was recorded on Parcel 5A in Deed Book 10773 at Page 1865 on February 2, 1999. To the best of our knowledge, there are no major underground utility easements located on the subject property and no utility easements with a width greater than twenty-five (25) feet on site.

5. See the RPA, EQC & Environmental Plan for an environmental narrative & approvals applied for or received.

6. The existing vegetation is as shown on the plans. An EVM has been submitted as part of this application.

7. A grave site exists on Parcel 39 near Merrybrook Run. The development will not impact the grave site.

8. To the best of our knowledge, no hazardous or toxic substances are present on site as set forth in Title 40, Code of Federal Regulations Parts 116.4, 302.4, and 355; all hazardous waste as set forth in Commonwealth of Virginia/Department of Waste Management Regulations VR 672-10-1 - Virginia Hazardous Waste Management Regulations; and/or petroleum products as defined in Title 40, Code of Federal Regulations, Part 280. To the best of our knowledge the proposed development will not generate, utilize, store, treat or dispose of any such substances on site.

9. The subject property is located in the Area III Dulles Suburban Center, Land Unit A of the Fairfax County Comprehensive Plan. The land use recommendation for the subject and adjacent properties is a complementary mix of land uses including office, hotel, residential and support retail at a .50-1.0 FAR. A portion of the site falls within one-half mile of the proposed Route 28/CIT Transit Station and is recommended to be developed at an intensity of up to 1.25 FAR.

10. A bicycle trail is proposed per the Comprehensive Plan on the west side of Centreville Road and the south side of Sunrise Valley Drive. North of Sunrise Valley Drive, the applicant proposes to build the trail for Centreville Road along the west bank of Merrybrook Run to maintain the sensitive ecological area between Centreville Road and the east bank of Merrybrook Run.

11. Right-of-way is being dedicated along Centreville Road and Sunrise Valley Drive and improvements are being made for widening of those roads pursuant to a site plan (Fairfax Co. No. 663-SP-01-2) by others. The Applicant will construct a right turn lane and dedicate additional right-of-way for a proposed right in - right out entrance onto Centreville Road. The Applicant will also construct a second left turn lane at the Woodland Park Road entrance opposite the main proposed site entrance on Centreville Road. The Applicant will widen a portion of Sunrise Valley Drive for improvements associated with the new site entrance.

12. Special amenities within the proposed development include a pool and clubhouse facility, landscaped streetscape, pedestrian plazas and/or courtyards, pedestrian trails and raised wood boardwalks through wetlands, and an elevated viewing gazebo. A park is proposed on Landbay E-F with a soccer field, basketball courts, tennis courts, tot lot, and picnic facilities. Additional recreational facilities for residential buildings will be provided in accordance with Article 6-209 Par. 2 and include possible walking trails, on-site pool facilities and other community-oriented facilities.

13. This application proposes protection and preservation of the existing wetlands where possible and the creation of new wetlands within the stormwater management facility to promote bio-filtering of stormwater runoff prior to it entering Merrybrook Run stream valley.

14. Parking will be provided in conformance with Article 11 of the zoning ordinance. The Applicant reserves the right to provide more parking than shown on the plan based on market conditions or seek a reduction from that shown based on an approved shared parking study (see separate Parking Tabulations Sheet 2). The applicant reserves the right to use landbays for surface parking until such time the proposed buildings requiring structured parking are built.

15. The site is in the Horsepen Creek watershed. Stormwater management (SWM) and Best Management Practices(BMP) facilities will be provided for the proposed development as shown on the CDP/FDP and as approved by DPWES during final site plan engineering.

16. Public water service to the proposed development will be provided by an extension of an existing 12" watermain in Sunrise Valley Drive and an existing 16" watermain in Centreville Road. Detailed water service design shall be completed during final engineering.

17. Public sanitary sewer service will be provided to the proposed development by an extension from the existing 18" sanitary sewer on site or in Centreville Road. Detailed design shall be completed during final engineering.

18. Ingress and egress to the property is via proposed entrances from Centreville Road and Sunrise Valley Drive.

19. The footprints of buildings represented on the CDP/FDP may be adjusted based on market conditions and final architecture and engineering design as long as minimum building setbacks from peripheral lot lines shown on the CDP/FDP are maintained. Minor modifications to all features shown on the CDP/FDP may be permitted as determined by the Zoning Administrator in accordance with the provisions set forth in Paragraph 4 of Section 16-403 of the Zoning Ordinance. Additional building features such as, but not limited to, decks, stoops, covered entries, patios, balconies, bay windows, and chimneys are not shown on the CDP/FDP and may be provided in accordance with the provisions set forth in Paragraph 4 of Section 16-403 of the Zoning Ordinance. Additional site features such as gazebos, trellises, entrance signs, flagpoles, fences and walls not shown on the CDP/FDP may be provided. The architectural and landscape features show the general intent and character of the proposed development and may vary with final building design, site plan and/or possible marketing/trademark design features desired by the end users.

20. Construction of all required public improvements shall be performed in conjunction with the normal approval and land development process unless noted herein.

21. Development of this project shall commence at such time as appropriate County approvals have been obtained and subject to the discretion of the owner. The applicant reserves the right to phase the development as determined by the final engineering and market conditions. The applicant reserves the right to subdivide the property at time of final site plan. Exact location and number of lot lines and parcels may vary at time of final engineering.

22. An air quality permit shall be obtained and provided prior to commencement of construction, if required.

23. Approximate limits of clearing and grading are shown on the CDP/FDP, and will vary based on final engineering and design. Where the limits of clearing and grading are not shown, it is assumed that the limits coincide with the outer boundary of the site.

24. Affordable dwelling units will be provided in accordance with Article 2-800 of the Zoning Ordinance.

25. FAA approval for height of the building will be obtained prior to site plan approval.

26. Signs will conform to Article 12 of the Zoning Ordinance. The applicant may seek a comprehensive signage plan at a later date.

27. To the best of our knowledge, the proposed development will be in conformance with applicable ordinances, regulations, and adopted standards except as qualified by above notes or as noted below:

A. A modification of the required number of loading spaces per Section 11-200 of the Zoning Ordinance for that shown herein to allow for shared use of loading spaces.

B. A waiver of the on-road bike lane requirement on Centreville Road and a modification of the trail requirement to allow the bike trail to run along the west side of Merrybrook Run to Sunrise Valley Drive instead of directly along Centreville Road to avoid significant grading and fill impacts in the 100-year floodplain.

C. A waiver of the transitional screening yard and barrier requirements between multi-family residential and office/commercial within the proposed development.

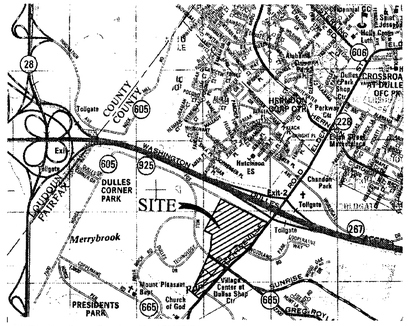
D. A waiver of the service drive requirement along the Dulles Airport Access Road.

E. Waiver of the 600-foot maximum length of private streets.

F. Modification of the minimum 8-foot width planting width to a 6-foot width to allow planting of trees within tree pits and planting strips along streets and within courtyards or plazas due to the urban design of the site.

G. A modification of Section 6-206 5. to allow residential to be 79% of the principal uses.

Application No. RZ 2002-HM-043 Staff A. Shriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 1 of 27
FDP 2002-HM-043
PC Approval: 11/30/2005
Development conditions dated: 11/9/2005

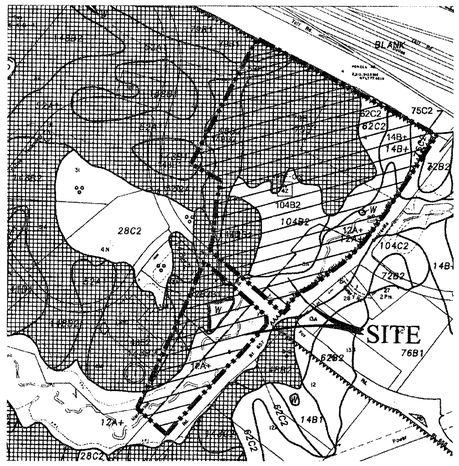


ADC The Map People Permitted Use #20103104

VICINITY MAP

SCALE: 1"=2000'

0 1000' 2000' 500'



SOILS MAP

SCALE: 1"=500'

0 250' 500' 125'

SHEET INDEX

1) COVER SHEET
2) SITE AND BUILDING TABULATIONS
3) EXISTING CONDITIONS PLAN 1"=100'
4) OVERALL CDP/FDP PLAN - (1"=100')
5) OVERALL LANDSCAPE PLAN - (1"=100')
6) SITE CROSS SECTIONS
7) TYPICAL BUILDING ELEVATIONS
8) ILLUSTRATIVE PERSPECTIVE
9) LANDBAY A - PLAN & SECTIONS
10) LANDBAY A - SITE AMENITIES
10A) LANDBAY A - PLAN & SECTION AT DULLES TOLL ROAD
11) LANDBAYS B & C - PLAN & SECTIONS
12) LANDBAYS B & C - SITE AMENITIES
13) LANDBAY D - PLAN & SECTIONS
14) LANDBAY D - SITE AMENITIES
15) LANDBAYS E-F - PLAN & SITE AMENITIES
16) LANDBAYS E-F - PLAN & SECTION
17) LANDBAY G - PLAN AND AMENITIES
18) ENTRY FEATURE DETAILS
19) SITE DETAILS
20) ROAD IMPROVEMENTS EXHIBIT
21) RPA, EQC & ENVIRONMENTAL PLAN 1"=100'
22) DRAINAGE SHED MAPS
23) SWM MAPS AND NARRATIVE
24) BMP COMPUTATIONS / MAPS
25) BMP COMPUTATIONS
26) OUTFALL EXHIBIT
27) OUTFALL NARRATIVE & REGIONAL POND INFORMATION

12A+	BOWLAND SILT LOAM	
14B+	MANASSAS SILT LOAM	
42B1	VERY ROCKY LAND (BASIC ROCK) UNDULATING PHASE	
48B2	IREDELL SILT LOAM, UNDULATING PHASE	
52A1	ELBERT SILT LOAM, NEARLY LEVEL PHASE	
52B1	ELBERT SILT LOAM, UNDULATING PHASE	
62C2	BRECKNOCK SILT LOAM, ROLLING PHASE	
75C2	PENN LOAM, ROLLING PHASE	
79B1	KELLY SILT LOAM, UNDULATING PHASE	
104B2	RARITAN SILT LOAM	
148B2	IREDELL-MECKLENBURG SILT LOAMS, UNDULATING PHASE	

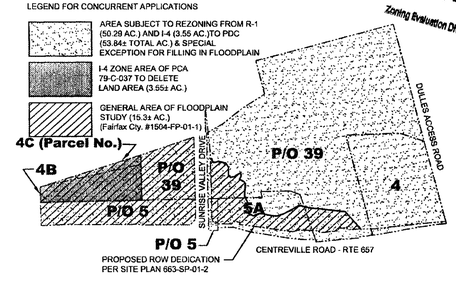
RECEIVED
Department of Planning & Zoning
OCT 28 2005
Zoning Evaluation Division

LEGEND FOR CONCURRENT APPLICATIONS

AREA SUBJECT TO REZONING FROM R-1 (50.29 AC.) AND I-4 (3.55 AC.)TO PDC (53.84± TOTAL AC.) & SPECIAL EXCEPTION FOR FILLING IN FLOODPLAIN

I-4 ZONE AREA OF PCA 79-C-037 TO DELETE LAND AREA (3.55± AC.)

GENERAL AREA OF FLOODPLAIN STUDY (15.3± AC.) (Fairfax Cty. #1504-FP-01-1)



FILED APPLICATIONS

SCALE: 1"=500'

0 250' 500' 125'

NO.	DESCRIPTION	DATE	REV'D	REV'W'D	APRV'D	DATE
12	Address County Comments	10/28/05				
11	Address County Comments	10/14/05				
10	Address County Comments	8/22/05				
9	Address County Comments	7/1/05				
8	Address County Comments	6/1/05				
7	Address County Comments	4/28/05				
6	Address County Comments	4/04/05				
5	Address County Comments	1/24/05				
4	Address County Comments	6/15/04				
3	Revised Submission-1.83M SF	4/13/04				
2	Revised Submission-2.27M SF	4/25/03				
1	Initial Submission-2.56M SF	11/22/02				

REVISION

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
DAVID H. STEGLER
No. 699
10/28/05
CERTIFIED LANDSCAPE ARCHITECT

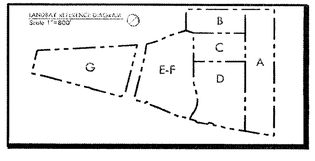
PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
COVER SHEET

DAVIS ■ CARTER ■ SCOTT
ARCHITECTURE AND INTERIOR ARCHITECTURE
Davis, Carter, Scott Ltd
1676 International Drive, Suite 500, McLean, Virginia 22102 ■ 703.556.9275
805 Fifteenth Street, N.W., Suite 1100, Washington, D.C. 20005 ■ 202.682.2300

Patton Harris Rust & Associates, pc
Engineers. Surveyors. Planners. Landscape Architects.
PHR+A
14532 Lee Road
Chantilly, VA 20151-1679
T 703.449.6700
F 703.449.8714

LANDBAY REFERENCE DIAGRAM
Scale 1"=800'



CO. PLAN #

DESIGN	SURVEY PHR+A
DRAWN REL	DATE June 3, 2002
CHECKED DHS	SCALE N/A
SHEET 1 OF 27	FILE NO. 09752-2-4

SITE TABULATIONS

Existing Zoning, Gross and Net Site Areas					
I-4 (Parcels 4B, 4C)	3.55	AC Or	154,747	SF	
R-1(Parcels 5,5A,39A)	50.29	AC Or	2,190,714	SF	
Gross Site Area	**53.84**	**AC Or**	**2,345,461**	**SF**	
Less Previous Centreville Rd. Dedication	-1.63	AC Or	-70,810	SF	
Less Previous Sunrise Valley Dr. Dedication	-0.44	AC Or	-19,173	SF	
Less Centreville Rd. Dedication This Plan	-0.33	AC Or	-14,216	+/-SF	
Less Sunrise Valley Dr. Dedication This Plan	-0.09	AC Or	-3,887	+/-SF	
Net Site Area	**51.36**	**AC Or**	**2,237,375**	**+/-SF**	
Proposed Zoning	**PDC - Planned Development Commercial**				
	Permitted/Required		Provided		
Total Site Area Before Dedication			2,345,461	SF	
Proposed Gross Floor Area w/o ADU Bonus	**2,345,461**	**SF**	**2,203,622**	**+/-SF**	
Floor Area Ratio w/o ADU Bonus	**1.00**		**0.94**		
Proposed Residential w/o ADU Bonus	768,602	+/-SF	971,222	+/-SF	
Existing Residential	5,400	+/-SF	5,400	+/-SF	
Total Proposed and Existing Residential	774,002		976,622	+/-SF	
Residential as Percentage of Total GFA	33%		44%		
Proposed ADU's and Bonus Residential Floor Area	103,750	SF	29,978	SF	
Total Proposed Gross Floor Area w/ ADU Bonus	2,449,211	SF	2,233,600	SF	
Floor Area Ratio w/ ADU Bonus	1.05		0.95		
Total Open Space	7.7	AC	18.0	+/-AC	
Total Open Space as a Percentage	15%		35%		
Recreational Open Space (6.8 Ac Park, 0.5 Ac. Pool)			7.3	+/- AC	

PARKING TABULATIONS(2)

	GFA +/-SF	Approx. No. of Rooms/Units	Spaces Required	Spaces Provided
Office @ 2.6 per 1000 SF GFA	800,000		2,080	
Hotel @ 1 per Room+4 per 50 Rooms	240,000	400	408	
Retail @ 1 per 200 SF 1st 1000, 6 per 1000 Remaining SF)	187,000		1,092	
Multi-Family Residential @ 1.6 / Dwelling Unit	1,001,200	872	1,395	
Total Proposed GFA	2,228,200			
Street/Surface Parking Spaces				250
Parking Structures Spaces				
Structure PS-A (Landbay A)				2,580
Structure PS-B (Landbay B)				250
Structure PS-C (Landbay C)				610
Structure PS-D (Landbay D)				1,330
Total Parking Spaces			**4,975**	**5,020**

(2) Parking tabulations are based on assumptions of GFA assigned to various uses. The applicant reserves the right to build more or less parking than shown as long as setbacks to peripheral lot lines are not reduced. Applicant will submit a shared parking study to build less parking than shown. The actual number of spaces required and provided will be determined at site plan as required by Article 11 of the Zoning Ordinance and, if applicable, the result of an approved shared parking study.

LOADING SPACE TABULATIONS(3)

Building Type and Standard	GFA +/-SF	Required	Provided
1. Office, Standard C	800,000	20	7-14
2. Hotel, Standard F	240,000	3	1-2
3. Retail, Standard B	187,000	10	4-6
4. Residential, Standard G	1,001,200	16	4-8
Total Loading Spaces		**49**	**16-30**

(3) Loading space tabulations are based on assumptions of GFA assigned to various uses. Applicant requests a modification of the required number of loading spaces. Actual number of loading spaces will be determined by type of use and per the approval by DPWES at the time of site plan approval as long as the minimum amount of loading spaces indicated under the Provided column above are provided.

ESTIMATED BUILDING GROSS FLOOR AREA

Landbay Bldg. No.	Proposed Use	Office +/-SF	Retail +/- SF	Hotel +/-SF	Residential +/-SF	Max. Height+/-	Stories	Approx. No. Residential Units	Approx. Hotel Units
A-1	Office	240,000	6,000			165 FT	9-12		
A-2	Office	135,000	6,000			130 FT	6-8		
A-3	Hotel			240,000		165 FT	9-12		400
A-4	Office	135,000	6,000			130 FT	6-8		
A-5	Retail		30,000			60 FT	2		
A-6	Office	287,000	6,000			165 FT	9-12		
B-1	Clubhouse	3,000				35 FT	1		
B-2	Multi-Fam. Residential		6,000		152,970	100 FT	4-6	133	
C-1	Multi-Fam. Residential				152,360	120 FT	6-8	132	
C-2	Multi-Fam. Residential				37,250	100 FT	4-6	32	
C-3	Multi-Fam. Residential				37,250	100 FT	4-6	32	
C-4	Multi-Fam. Residential		6,000		152,360	120 FT	6-8	132	
D-1	Retail/Multi-Fam. Residential		45,000		158,010	125 FT	5-7	137	
D-2	Retail/Multi-Fam. Residential		8,000		173,800	150 FT	9-11	151	
D-3	Retail		13,000			60 FT	2		
D-4	Retail/Multi-Fam. Residential		55,000		137,200	125 FT	5-7	119	
E-F	Dedicated Park Site								
E-F	Exist.SF Detached Residential				5,400	35 FT	2	1	
	Total Proposed SF GFA	**800,000**	**187,000**	**240,000**	**1,006,600**			**872**	**400**
	Maximum Possible Residential Use (includes ex. residence to remain, ADU				1,006,600	+/-SF(1)			
	Maximum Principal Uses				1,227,000	+/-SF			
	Total GFA All Uses w/ ADU's & Density Bonus				2,233,600	+/-SF			
	Residential W/O ADU's & Density Bonus				971,222	+/-SF			
	Residential W/O ADU's as Percentage of Principal Uses				79%				
	NOTES:								
	(1) Includes 29,978 SF in ADU's and density bonus units excluded from the 50% of principal use limitation.								

ADU Calculation

I. Assumptions: Mixed use development with approximately 60 percent non-residential use and 40 percent residential use. The Comprehensive Plan recommends a range .5 – 1.0 FAR. The proposed development includes a total of 2,233,600 square feet of which 1,227,000 square feet are commercial and 1,006,600 square feet are residential, resulting in an overall FAR of 0.95. Residential is comprised of 873 units: 1 existing single family detached and 872 multi-family. Most all of the multi-family units would be high rise construction and would be exempt from the ADU Ordinance. Building B-2 may be either 4 stories with elevators and 50 percent or more of required parking provided in structures with a potential maximum ADU requirement of 5 percent, or high rise construction which would be exempt from the ADU Ordinance. This calculation assumes Building B-2, with approximately 133 units, is not a high rise. The combined average square footage of the proposed residential units is 1,153 square feet. The size of entire site is 53.84 acres.

II. Density of Proposal: 873 / 53.84 = 16.21 dwelling units per acre

III. Calculation of Density Range:

Size of site x FAR x (Residential Mix %) = Maximum allowable residential square footage

2,345,461 square feet x 1.0 x .40 = 938,184 square feet

938,184 square feet / 1,153 ave. unit size = 813 dwelling units

813 dwelling units / 53.84 acres = 15.1 du/ac

Upper end of density range = 15.10 du/ac
Lower end of density range = 7.55 du/ac
Upper end of adjusted density range = 17.6 du/ac
Lower end of adjusted density range = 8.8 du/ac

IV. ADU Calculation

16.21 – 7.55 = 8.66 = .98 x 5% = 4.9 % ADU Requirement
17.6 – 8.8 = 8.8

4.9% x 133 units = 6.5 rounded up to 7 MF ADUs, however the Applicant is electing to provide double the number of required ADUs for a total of **14 ADUs**

V. Bonus Calculation

ADUs provided 5.00%
Maximum Bonus 17%

114 base units x 1.17 bonus % = 133 units

Therefore,
114 base units
12 bonus units
7 required ADUs
133 units

7 Required ADUs + 7 Additional ADUs + 12 Bonus Units = **26 Total ADU/Bonus Units**

26 MF ADU/bonus units x 1,153 = **29,978 SF = Permitted Bonus**

Application No. RZ 2002-HM-043 Staff A. Sliriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 2 of 27
FDP 2002-HM-043
PC dated: 11/9/2005
PC approval: 11/30/2005

LEGEND

- POSSIBLE FCPA DEDICATION OUTSIDE RPA
- POSSIBLE FCPA DEDICATION WITHIN RPA
- LANDBAY BOUNDARY / PROPERTY LINE
- SWM / BMP AREA
- EXIST. RPA LINE

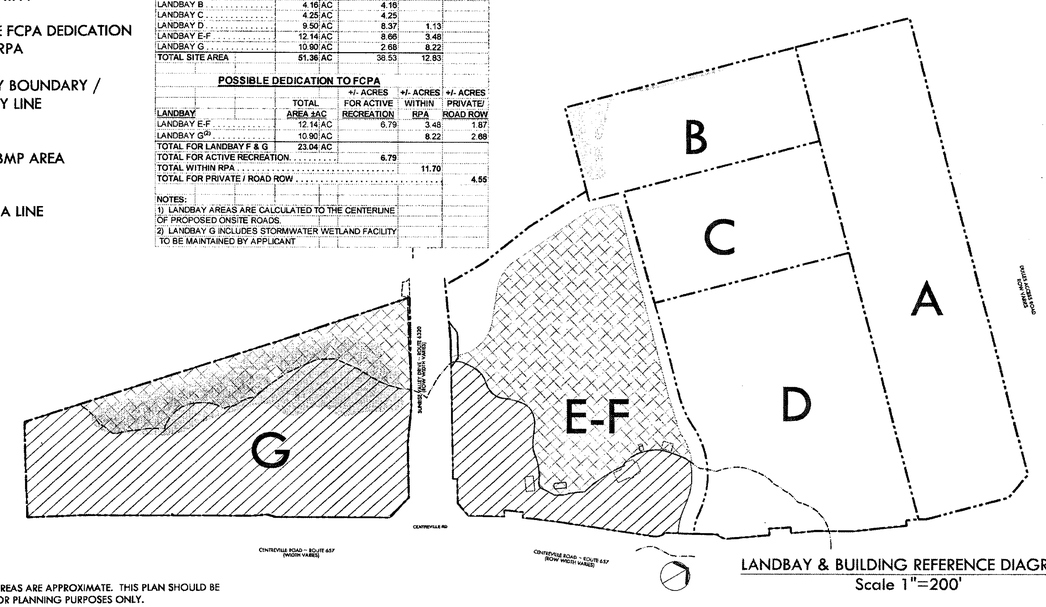
LANDBAY AREA TABULATIONS(1)

LANDBAY	TOTAL AREA ±AC	+/- ACRES OUTSIDE RPA	+/- ACRES WITHIN RPA
LANDBAY A	10.41 AC	10.41	
LANDBAY B	4.16 AC	4.16	
LANDBAY C	4.25 AC	4.25	
LANDBAY D	9.50 AC	8.37	1.13
LANDBAY E-F	12.14 AC	8.66	3.48
LANDBAY G	10.90 AC	2.68	8.22
TOTAL SITE AREA	51.36 AC	38.53	12.83

POSSIBLE DEDICATION TO FCPA

LANDBAY	TOTAL AREA ±AC	+/- ACRES FOR ACTIVE RECREATION	+/- ACRES WITHIN RPA	+/- ACRES PRIVATE/ ROAD ROW
LANDBAY E-F	12.14 AC	6.79	3.48	1.87
LANDBAY G(2)	10.90 AC		8.22	2.68
TOTAL FOR LANDBAY F & G	23.04 AC			
TOTAL FOR ACTIVE RECREATION		6.79		
TOTAL WITHIN RPA			11.70	
TOTAL FOR PRIVATE / ROAD ROW				4.55

NOTES:
1) LANDBAY AREAS ARE CALCULATED TO THE CENTERLINE OF PROPOSED ONSITE ROADS.
2) LANDBAY G INCLUDES STORMWATER WETLAND FACILITY TO BE MAINTAINED BY APPLICANT



LANDBAY & BUILDING REFERENCE DIAGRAM
Scale 1"=200'

NOTE:
1) ALL AREAS ARE APPROXIMATE. THIS PLAN SHOULD BE USED FOR PLANNING PURPOSES ONLY.

NO.	DESCRIPTION	DATE	REVS'D	REVW'D	APRV'D	DATE
12	Address County Comments	10/28/05				
11	Address County Comments	10/14/05				
10	Address County Comments	8/22/05				
9	Address County Comments	7/1/05				
8	Address County Comments	6/1/05				
7	Address County Comments	4/28/05				
6	Address County Comments	4/04/05				
5	Address County Comments	1/24/05				
4	Address County Comments	6/15/04				
3	Revised Submission-1.83M SF	4/13/04				
2	Revised Submission-2.27M SF	4/25/03				
1	Initial Submission-2.56M SF	11/22/02				

REVISION

PROFESSIONAL SEAL: COMMONWEALTH OF VIRGINIA, DAVID H. STEIGLER No. 609, 10-28-05, CERTIFIED LANDSCAPE ARCHITECT

PROJECT: CDP / FDP / PCA ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE: TABULATIONS

DAVIS ■ CARTER ■ SCOTT
ARCHITECTURE AND INTERIOR ARCHITECTURE
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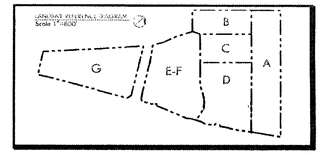
T 703.449.6700
F 703.449.6714

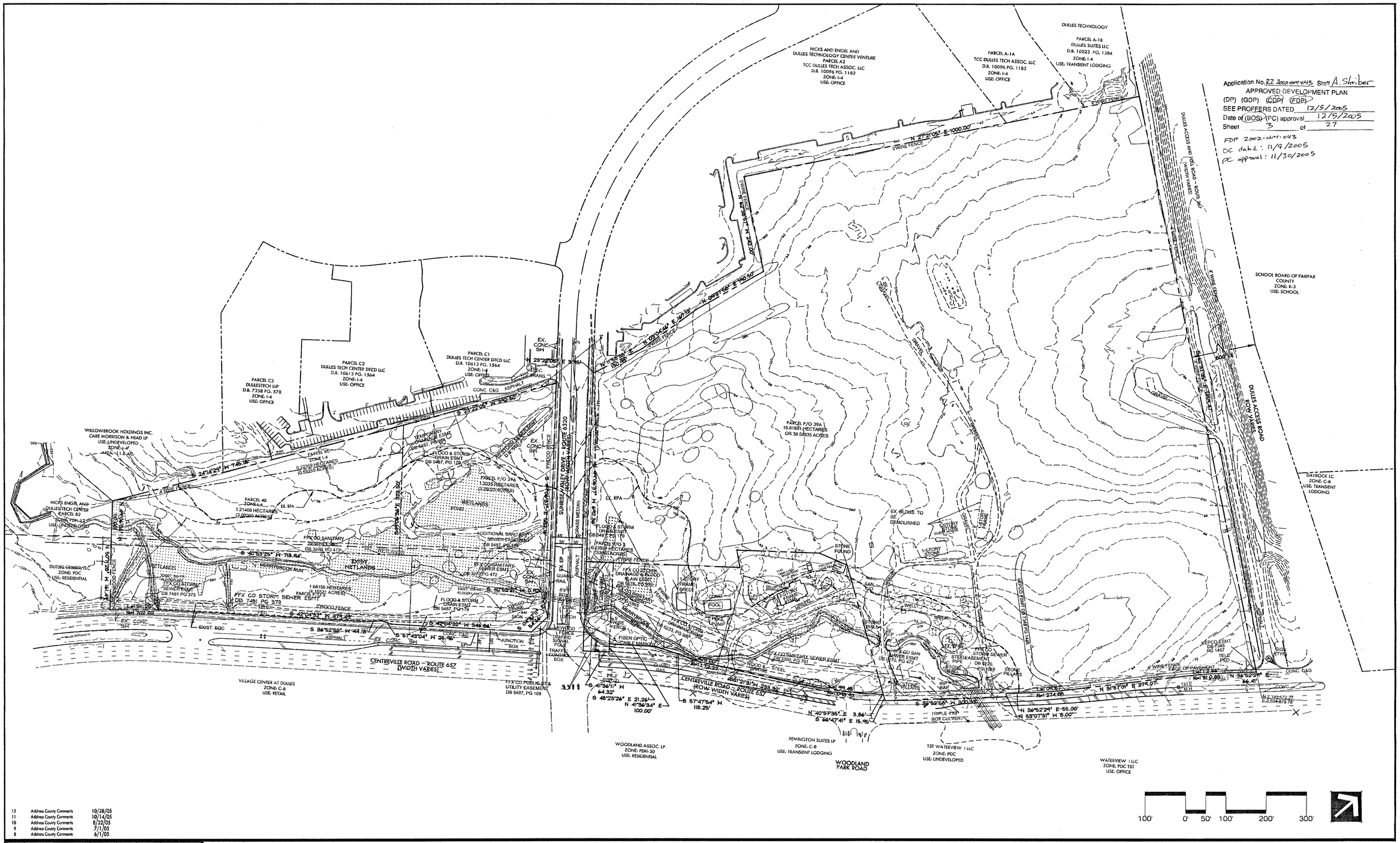


CO. PLAN #

DESIGN	SURVEY PHR+A
DRAWN REL	DATE June 3, 2002
CHECKED DHS	SCALE N/A
SHEET 2 OF 27	FILE NO. 09752-2-4

Application No. RZ 2002-HM-043 Staff A. Shriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 3 of 27

FDP 2002-HM-043
BC dated: 11/9/2005
PC approval: 11/30/2005



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1	Initial Submission-2.56M SF	11/22/02				

REVISION

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
No. 609
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
EXISTING CONDITIONS PLAN

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LONGREACH REFERENCE DIAGRAM
Scale 1"=800'

	B	
	C	A
G	E-F	D

CO. PLAN #

DESIGN	SURVEY PHR+A
DRAWN REL	DATE June 3, 2002
CHECKED DHS	SCALE 1"=100'
SHEET 3 OF 27	FILE NO. 09752-2-4

ANGLE OF BULK PLANE

(NO SCALE)

θ ; ANGLE OF BULK PLANE
LL ; LOT LINE
MYR ; MINIMUM YARD REQUIREMENT
EBH ; EFFECTIVE BUILDING HEIGHT
MBH ; MAXIMUM BUILDING HEIGHT
G ; GRADE (FINISHED)

$$MYR = EBH \frac{TAN(\theta)}{TAN(\theta)}$$

$$EBH = \frac{MYR}{TAN(\theta)}$$

ABP REF. NO.	YARD	LOCATION	EX. ELEV. @ PL	θ		MYR		EBH	MBH
				REQ'D.*	PROV.	REQ'D.	PROV.	-	-
ABP-1	FRONT	BLDG. A-6 @ DAAR	367'	25°	20°	75'	75'	177'	165'
ABP-2	REAR	BLDG. B-2 @ WESTERN PL	362	20°	18°	25'	45'	130'	120'
ABP-3	SIDE	BLDG. C-1 MULTI-FAMILY	362	0°	45°	0'	155'	126'	120'

* TO BE USED AS A GUIDELINE. C4 DISTRICT (HIGH INTENSITY OFFICE) BULK REGULATIONS USED AS MOST SIMILAR DISTRICT TO PROPOSED DEVELOPMENT

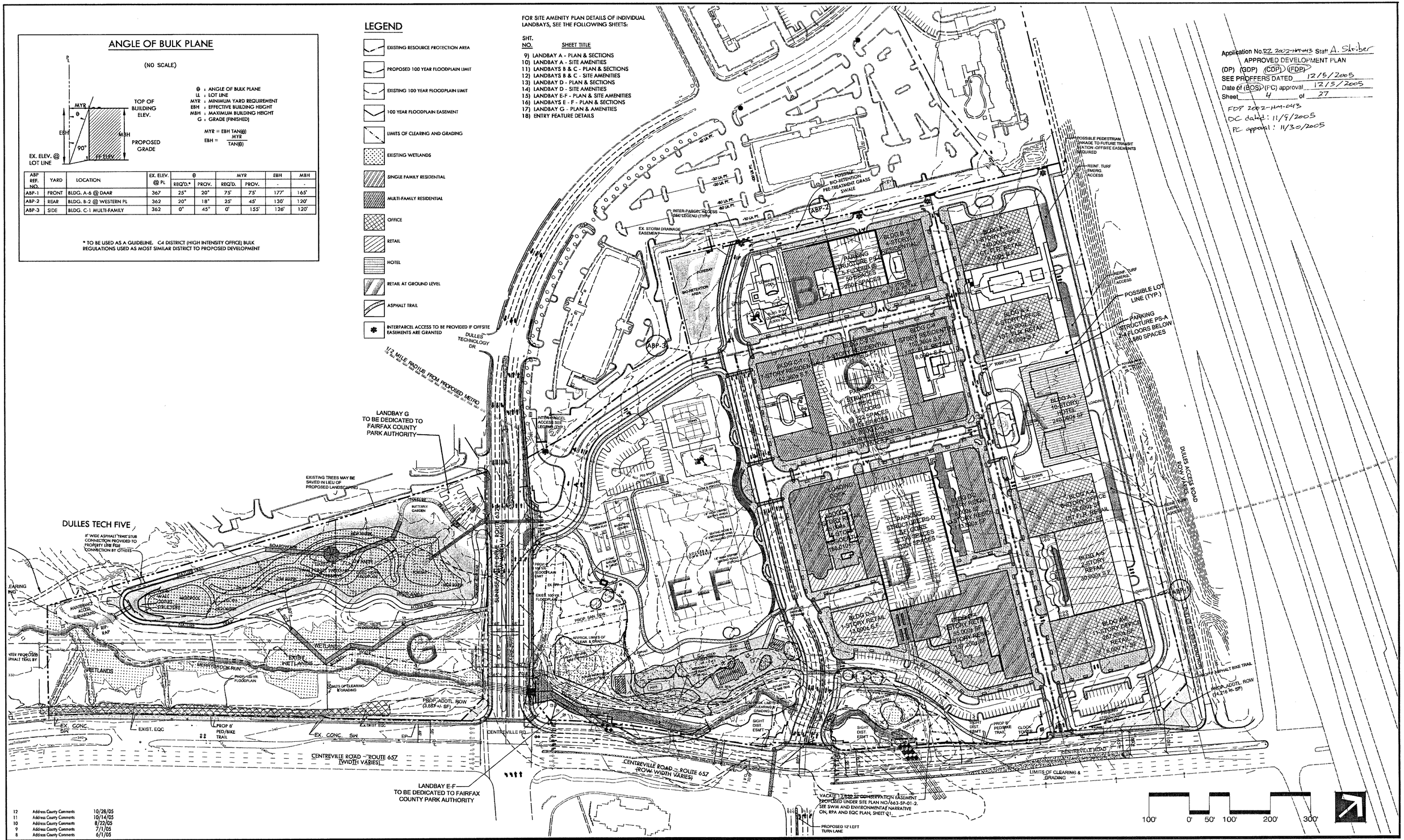
LEGEND

- EXISTING RESOURCE PROTECTION AREA
- PROPOSED 100 YEAR FLOODPLAIN LIMIT
- EXISTING 100 YEAR FLOODPLAIN LIMIT
- 100 YEAR FLOODPLAIN EASEMENT
- LIMITS OF CLEARING AND GRADING
- EXISTING WETLANDS
- SINGLE FAMILY RESIDENTIAL
- MULTI-FAMILY RESIDENTIAL
- OFFICE
- RETAIL
- HOTEL
- RETAIL AT GROUND LEVEL
- ASPHALT TRAIL
- INTERPARCEL ACCESS TO BE PROVIDED IF OFFSITE EASEMENTS ARE GRANTED

FOR SITE AMENITY PLAN DETAILS OF INDIVIDUAL LANDBAYS, SEE THE FOLLOWING SHEETS:

SHT. NO.	SHEET TITLE
9)	LANDBAY A - PLAN & SECTIONS
10)	LANDBAY A - SITE AMENITIES
11)	LANDBAYS B & C - PLAN & SECTIONS
12)	LANDBAYS B & C - SITE AMENITIES
13)	LANDBAY D - PLAN & SECTIONS
14)	LANDBAY D - SITE AMENITIES
15)	LANDBAY E-F - PLAN & SITE AMENITIES
16)	LANDBAYS E - F - PLAN & SECTIONS
17)	LANDBAY G - PLAN & AMENITIES
18)	ENTRY FEATURE DETAILS

Application No. RZ 2002-HM-043 Staff A. Striber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 4 of 27
FDP 2002-HM-043
DC dated: 11/9/2005
PC approval: 11/30/2005


DULLES TECH FIVE
LANDBAY G TO BE DEDICATED TO FAIRFAX COUNTY PARK AUTHORITY
LANDBAY E-F TO BE DEDICATED TO FAIRFAX COUNTY PARK AUTHORITY
CENTREVILLE ROAD - ROUTE 657 (WIDTH VARIES)
DULLES TECHNOLOGY DR
1/2 MILE RADIUS FROM PROPOSED METRO
EXISTING TREES MAY BE SAVED IN LIEU OF PROPOSED LANDSCAPING
POSSIBLE BIO-RETENTION PRE-TREATMENT GRASS SWALE
POSSIBLE PEDESTRIAN LINKAGE TO FUTURE TRANSIT STATION -OFFSITE EASEMENTS REQUIRED
POSSIBLE LOT LINE (TYP.)
PARKING STRUCTURE PS-A 3-4 FLOORS BELOW 580 SPACES
BLDG A-3 10-STORY HOTEL 240,000 S.F.
BLDG A-4 6-STORY OFFICE 240,000 S.F. 1ST FLR RETAIL 8,000 S.F.
BLDG A-5 2-STORY RETAIL 30,000 S.F.
BLDG A-6 10-STORY OFFICE 287,000 S.F. RETAIL 8,000 S.F.
BLDG B-3 4-STORY RESIDENTIAL
BLDG B-4 6-STORY OFFICE 150,000 S.F. 1ST FLR RETAIL 6,000 S.F.
BLDG C-4 5-STORY RESIDENTIAL 152,000 S.F.
BLDG C-5 5-STORY RESIDENTIAL 152,000 S.F.
BLDG C-6 5-STORY RESIDENTIAL 152,000 S.F.
BLDG C-7 5-STORY RESIDENTIAL 152,000 S.F.
PARKING STRUCTURE PS-C 6 FLOORS @ 752 SPACES 1101 SPACES
PARKING STRUCTURE PS-D 4 FLOORS @ 1179 SPACES 1400 SPACES
BLDG D1 1-STORY RETAIL 13,000 S.F.
BLDG D2 1-STORY RETAIL 13,000 S.F.
BLDG D3 1-STORY RETAIL 13,000 S.F.
BLDG D4 1-STORY RETAIL 35,000 S.F. 2-STORY RESID. 137,200 S.F.
BLDG D5 1-STORY RETAIL 35,000 S.F. 2-STORY RESID. 137,200 S.F.
BLDG D6 1-STORY RETAIL 35,000 S.F. 2-STORY RESID. 137,200 S.F.
BLDG D7 1-STORY RETAIL 35,000 S.F. 2-STORY RESID. 137,200 S.F.
BLDG

FOR SITE AMENITY PLAN DETAILS OF INDIVIDUAL LANDBAYS, SEE THE FOLLOWING SHEETS:

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14)	LANDBAY D - SITE AMENITIES
15)	LANDBAY E-F - PLAN & SITE AMENITIES
16)	LANDBAYS E - F - PLAN & SECTIONS
17)	LANDBAY G - PLAN & AMENITIES
18)	ENTRY FEATURE DETAILS

Application No. RZ 2002-Hm-043 Staff A. Shriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 5 of 27

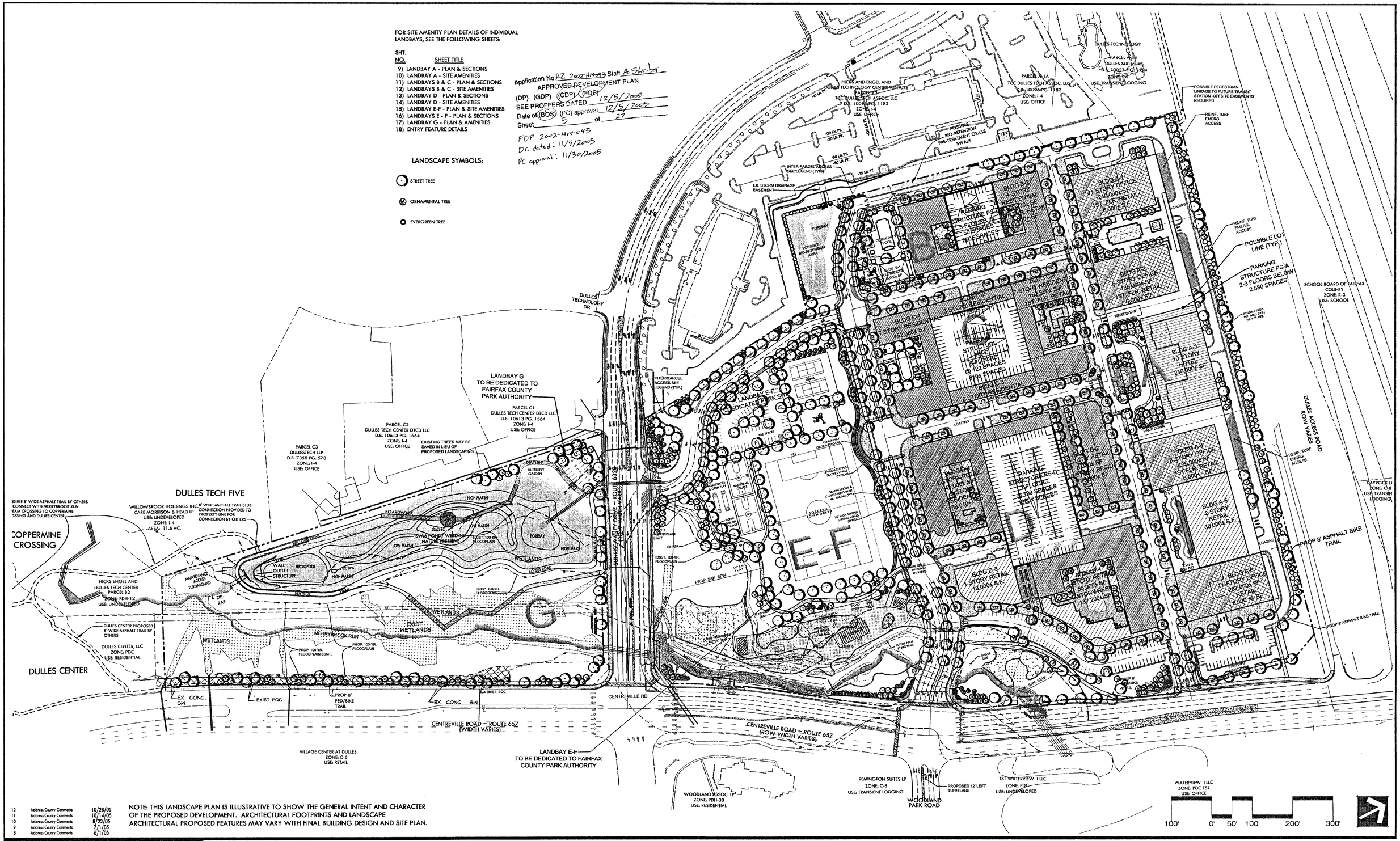
FDP 2002-Hm-043
DC dated: 11/9/2005
PC approval: 11/30/2005

LANDSCAPE SYMBOLS:

STREET TREE

ORNAMENTAL TREE

EVERGREEN TREE



NOTE: THIS LANDSCAPE PLAN IS ILLUSTRATIVE TO SHOW THE GENERAL INTENT AND CHARACTER OF THE PROPOSED DEVELOPMENT. ARCHITECTURAL FOOTPRINTS AND LANDSCAPE ARCHITECTURAL PROPOSED FEATURES MAY VARY WITH FINAL BUILDING DESIGN AND SITE PLAN.

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REVISION

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
No. 659
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
LANDSCAPE PLAN

DAVIS ■ CARTER ■ SCOTT
ARCHITECTURE AND INTERIOR ARCHITECTURE
Davis, Carter, Scott Ltd
1676 International Drive, Suite 500, McLean, Virginia 22102 ■ 703.556.9275
805 Fifteenth Street, N.W., Suite 1100, Washington, D.C. 20005 ■ 202.682.2300

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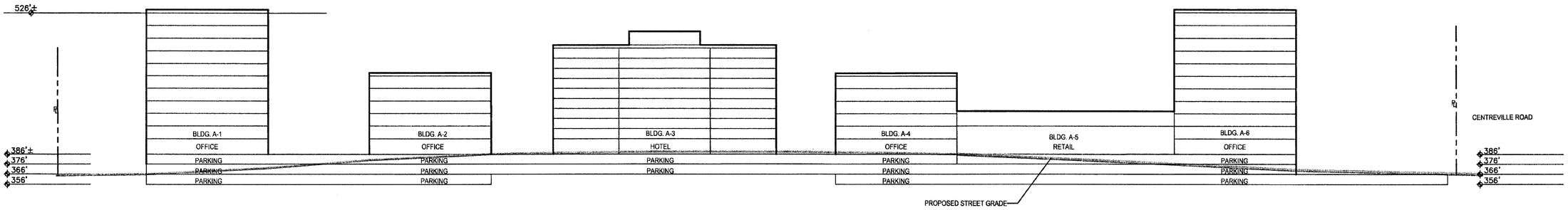
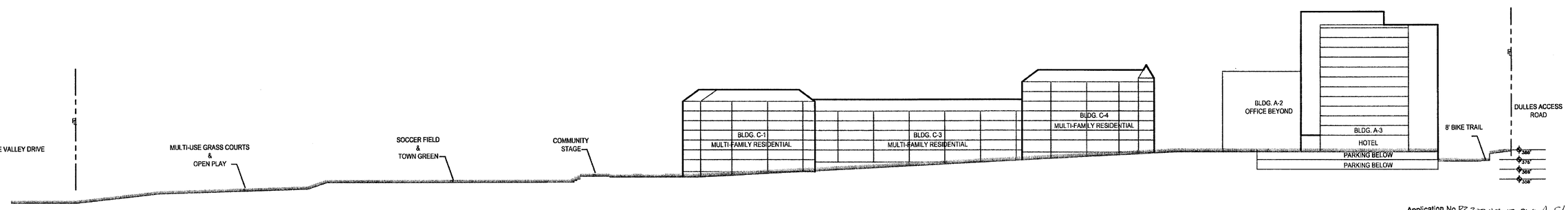
LANDBAY REFERENCE DIAGRAM
Scale: 1"=800'
G E-F B C D A

CO. PLAN #

DESIGN	REL	SURVEY	PHR+A
DRAWN	REL	DATE	June 3, 2002
CHECKED	DHS	SCALE	1"=100'
SHEET	5 OF 27	FILE NO.	09752-2-4



E-1 WEST-EAST CROSS SECTION ELEVATION LOOKING NORTH
SCALE: 1" = 50'



E-2 NORTH-SOUTH CROSS SECTION ELEVATION LOOKING WEST
SCALE: 1" = 50'

Application No. RZ 2002-HM-043 Staff A. Shribe
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 6 of 27
FDP 2002-HM-043
DC dated: 11/9/2005
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NOTE: THIS SECTION-ELEVATION REPRESENTS A CONCEPTUAL DESIGN SOLUTION TO PROVIDE UNDERGROUND PARKING. THE APPLICANT RESERVES THE RIGHT TO PROVIDE STRUCTURED PARKING IN THE LOWER LEVELS OF THE BUILDINGS SUBJECT TO REVISIONS BASED ON FINAL ARCHITECTURAL AND ENGINEERING DESIGN.

50' 0' 25' 50' 100' 150'

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REVISION

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
No. 609
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
SITE
CROSS-SECTIONS

DAVIS ■ CARTER ■ SCOTT
ARCHITECTURE AND INTERIOR ARCHITECTURE
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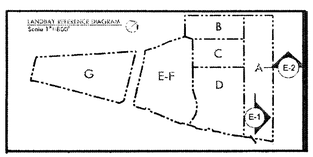
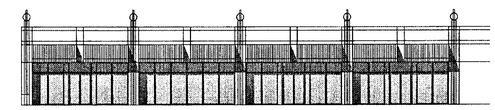


CO. PLAN

DESIGN	REL	SURVEY	PHR+A
DRAWN	REL	DATE	June 3, 2002
CHECKED	DHS	SCALE	1"=50'
SHEET	6 OF 27	FILE NO.	09752-2-4

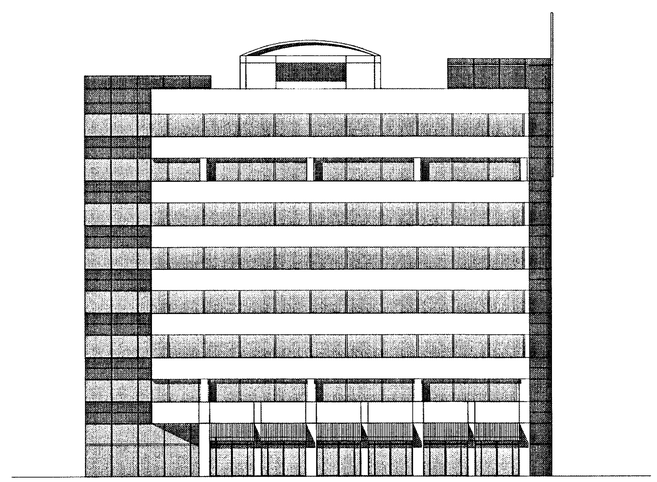
1 MULTI-FAMILY RESIDENTIAL Landbay C
SCALE: 1"= 20'-0"

2 RETAIL AND MID-RISE MULTI-FAMILY RESIDENTIAL - Landbay D
SCALE: 1" = 20'-0"

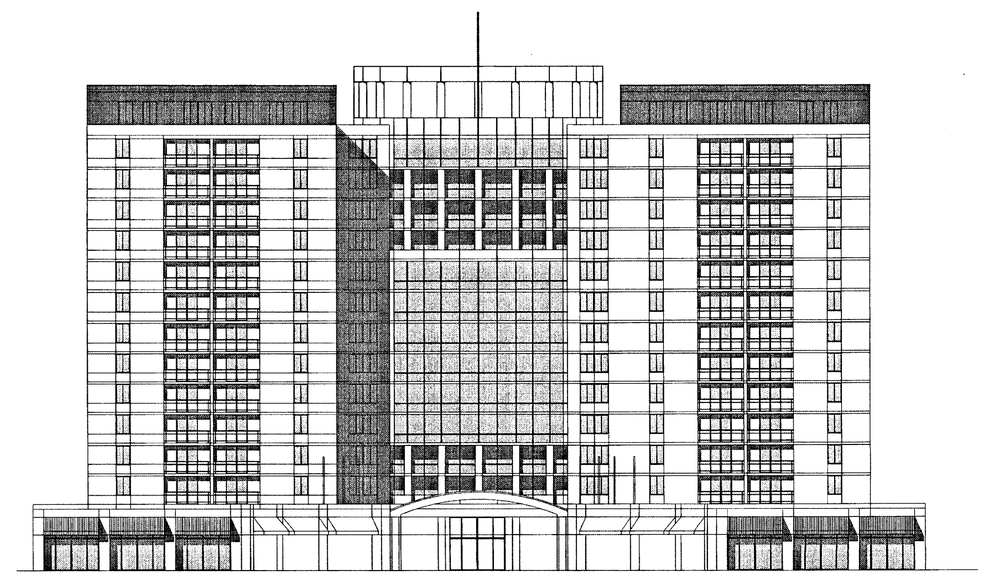


3 RETAIL - Landbay D
SCALE: 1" = 20'-0"

4 RETAIL AND MULTI-FAMILY RESIDENTIAL Landbay D
SCALE: 1" = 20'-0"



5 OFFICE - Landbay A
SCALE: 1" = 20'-0"



6 HOTEL - Landbay A
SCALE: 1" = 20'-0"

Application No. RZ 2002-HM-043 Staff A. Shribar
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
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Sheet 7 of 27
FDP 2002-HM-043
DC dated: 11/9/2005
PC approval: 11/30/2005

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REVISION

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
No. 609
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
TYPICAL BUILDING ELEVATIONS

DAVIS ■ CARTER ■ SCOTT
ARCHITECTURE AND INTERIOR ARCHITECTURE
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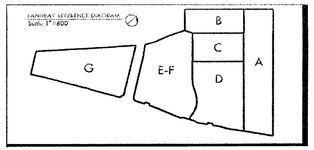
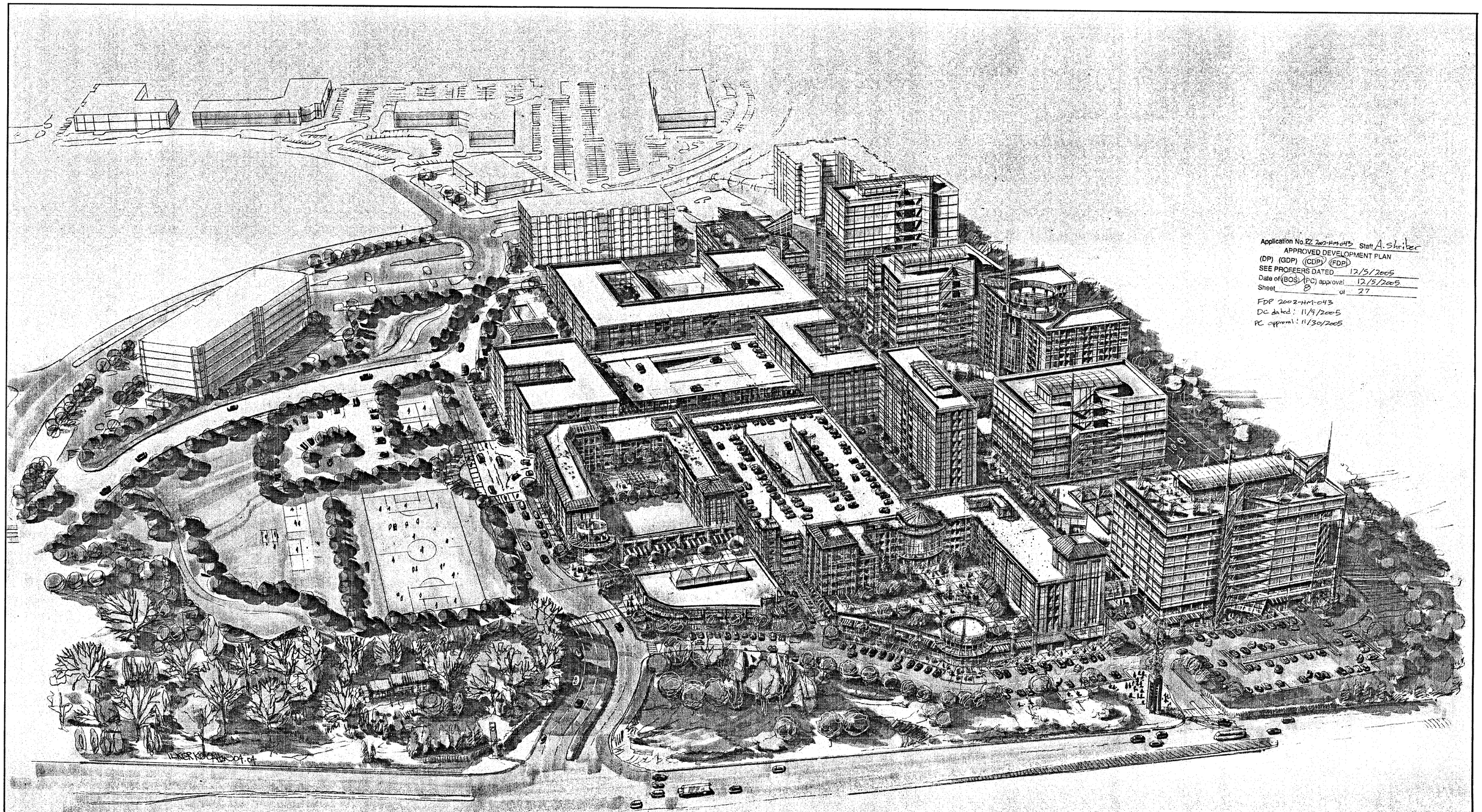
LANDBAY REFERENCE DIAGRAM
Scale: 1"=800'


CO. PLAN #

DESIGN REL	SURVEY PHR+A
DRAWN REL	DATE June 3, 2002
CHECKED DHS	SCALE 1"=20'-0"
SHEET 7 OF 27	FILE NO. 09752-2-4



Application No. RZ 2002-HM-043 Staff A. Shriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 8 of 27

FDP 2002-HM-043
DC dated: 11/9/2005
PC approval: 11/30/2005

NOTE: THIS RENDERING IS ILLUSTRATIVE TO SHOW THE GENERAL INTENT AND CHARACTER OF THE PROPOSED DEVELOPMENT. ARCHITECTURAL AND LANDSCAPE ARCHITECTURAL PROPOSED FEATURES MAY VARY WITH FINAL BUILDING DESIGN AND SITE PLAN.

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REVISION

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
No. 609
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
ILLUSTRATIVE PERSPECTIVE

DAVIS ■ CARTER ■ SCOTT
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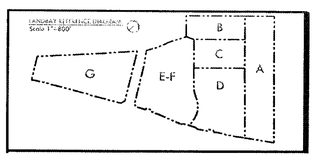
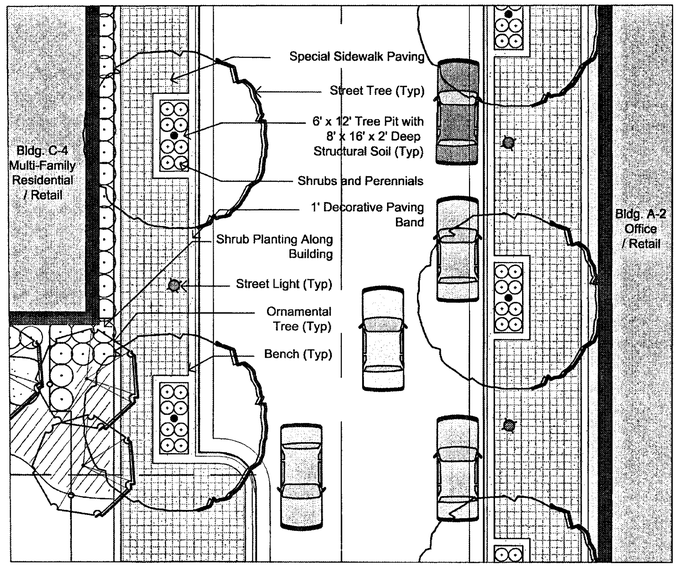
LANDMART SETTLEMENT DRAWING
Scale 1"=800'

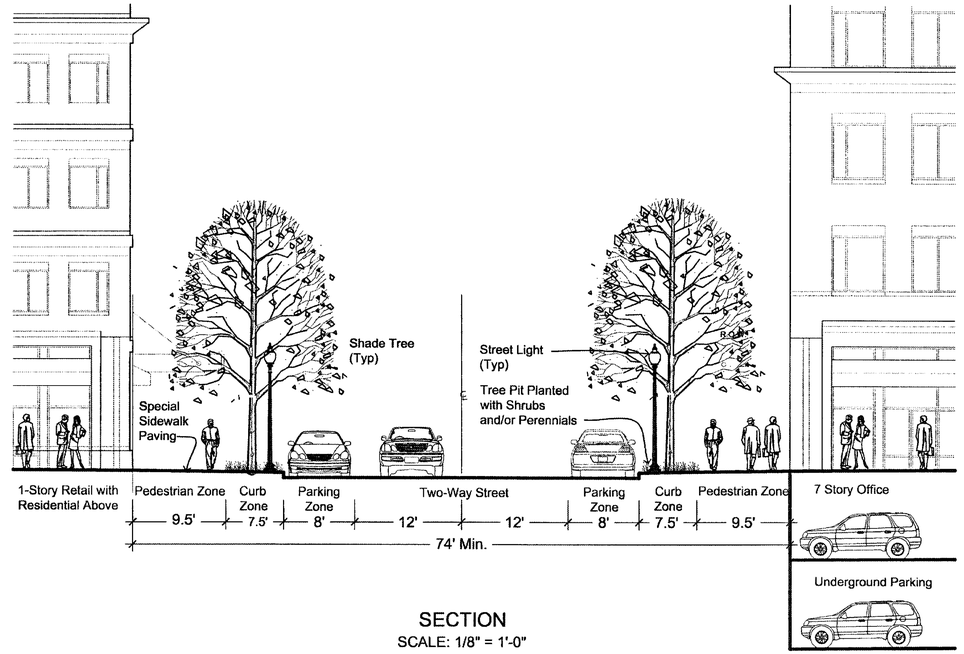


CO. PLAN

DESIGN	SURVEY PHR+A
DRAWN REL	DATE June 3, 2002
CHECKED DHS	SCALE
SHEET 8 OF 27	FILE NO. 09752-2-4

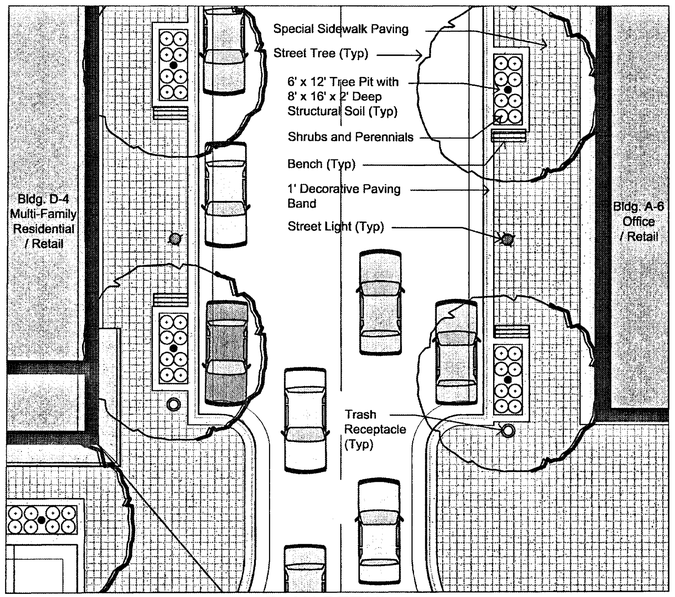


PLAN DETAIL
SCALE: 1" = 10'



SECTION
SCALE: 1/8" = 1'-0"

1 RESIDENTIAL - OFFICE STREETSCAPE: PLAN DETAIL AND SECTION



PLAN DETAIL
SCALE: 1" = 10'

Application No. RZ 2002-HM-048 Staff A. Striber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
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Sheet 9 of 27
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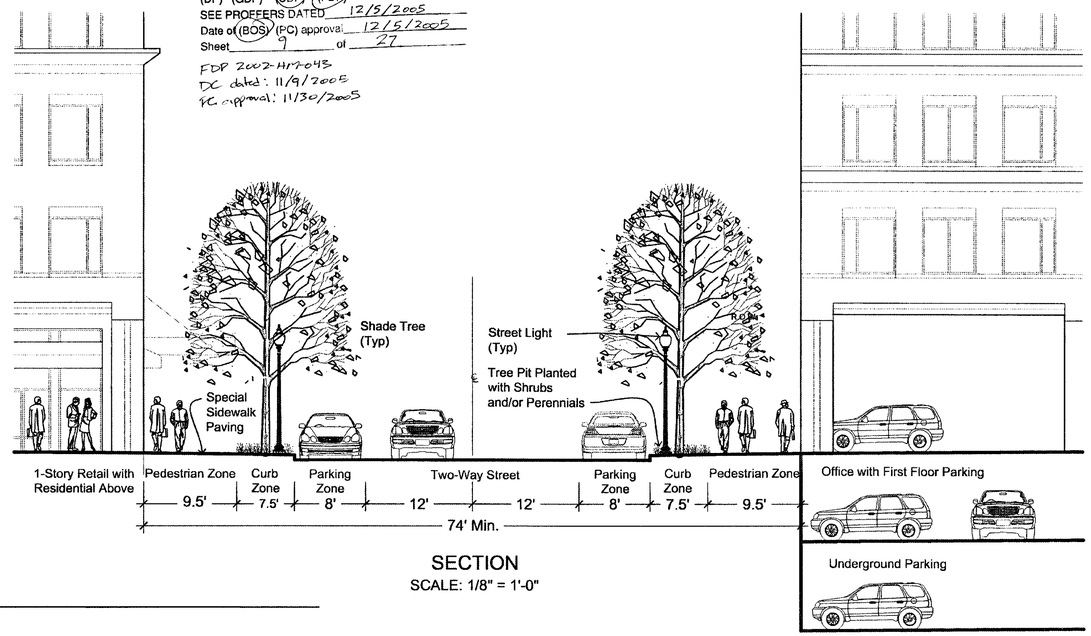
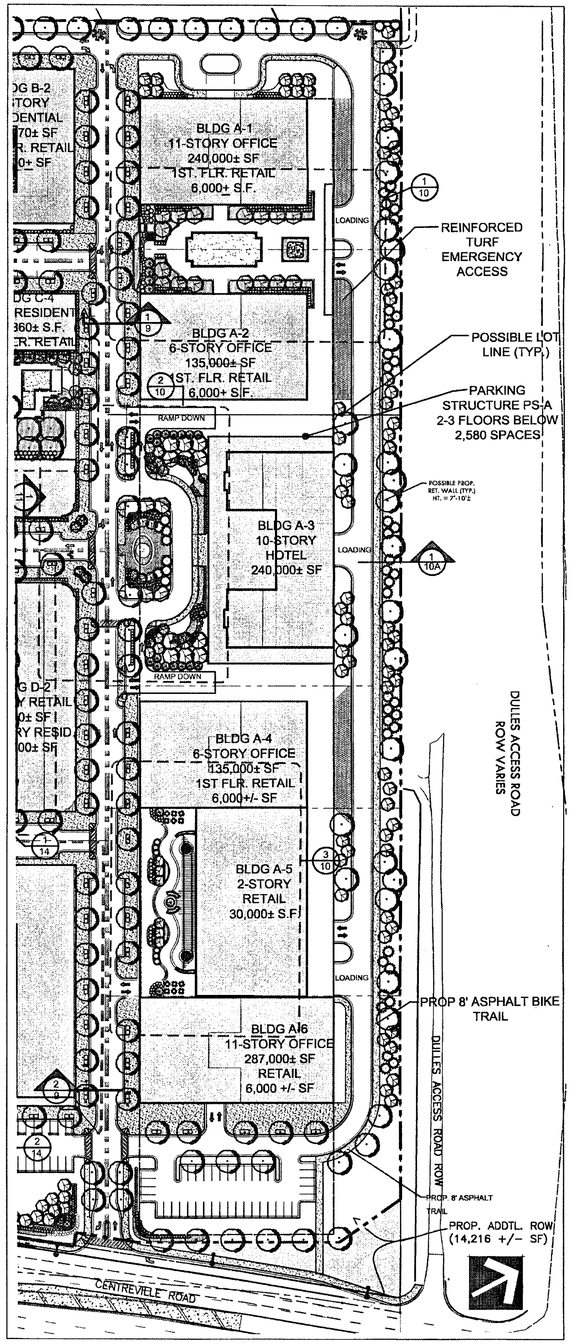
DC dated: 11/9/2005
PC approval: 11/30/2005



SECTION
SCALE: 1/8" = 1'-0"

2 RESIDENTIAL/RETAIL - OFFICE STREETSCAPE: PLAN DETAIL AND SECTION



3 LANDBAY A: PLAN
SCALE: 1" = 80'

NO.	DESCRIPTION	DATE	REVS'D	REVW'D	APRV'D	DATE
12	Address County Comments	10/28/05				
11	Address County Comments	10/14/05				
10	Address County Comments	8/22/05				
9	Address County Comments	7/1/05				
8	Address County Comments	6/1/05				
7	Address County Comments	4/28/05				
6	Address County Comments	4/04/05				
5	Address County Comments	1/24/05				
4	Address County Comments	6/15/04				
3	Revised Submission-1.83M SF	4/13/04				
2	Revised Submission-2.27M SF	4/25/03				
1	Initial Submission-2.56M SF	11/22/02				

REVISION

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
No. 609
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
LANDBAY A PLAN AND SECTIONS

DAVIS ■ CARTER ■ SCOTT
ARCHITECTURE AND INTERIOR ARCHITECTURE
Davis, Carter, Scott Ltd
1676 International Drive, Suite 500, McLean, Virginia 22102 ■ 703.556.9275
805 Fifteenth Street, N.W., Suite 1100, Washington, D.C. 20005 ■ 202.682.2300

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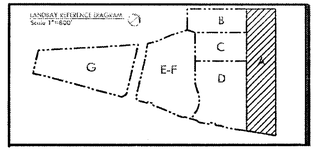
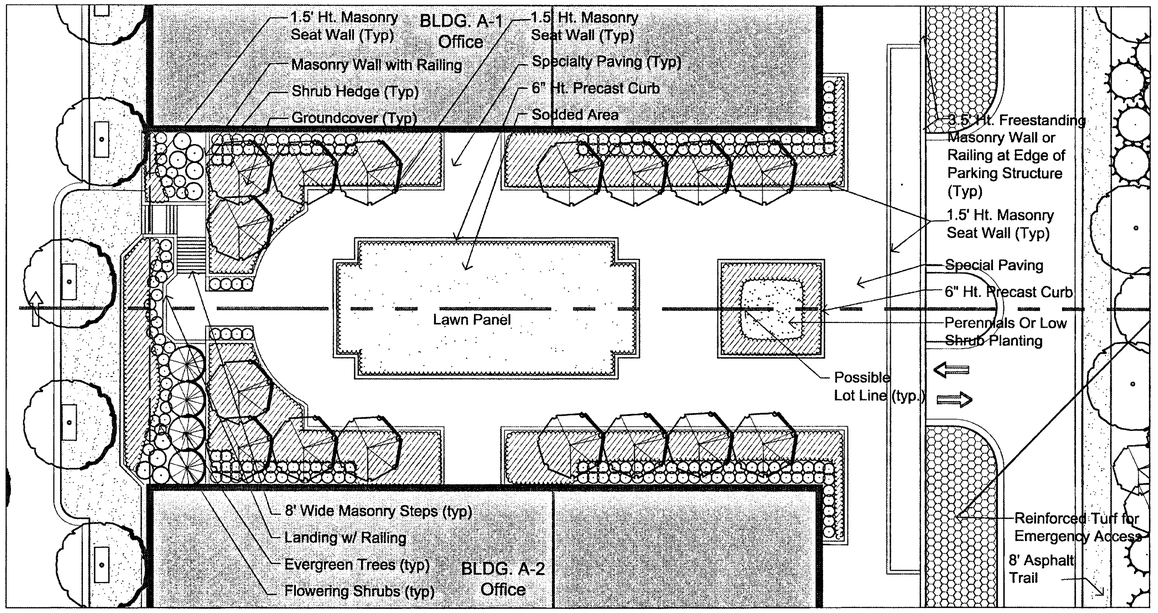
PHR+A
14532 Lee Road
Chantilly, VA 20151-1679
T 703.449.6700
F 703.449.8714

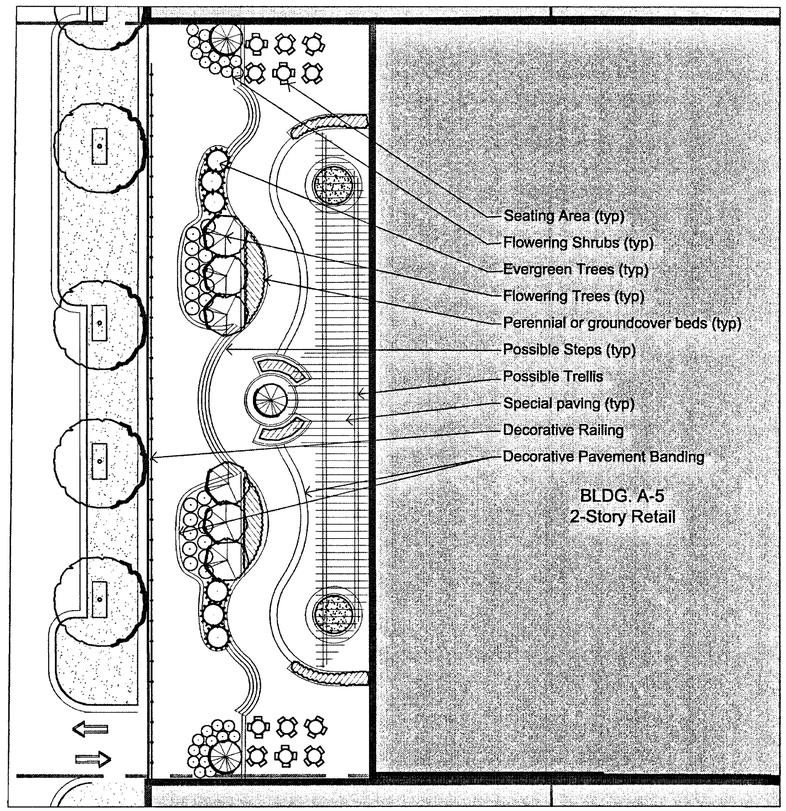


CO. PLAN

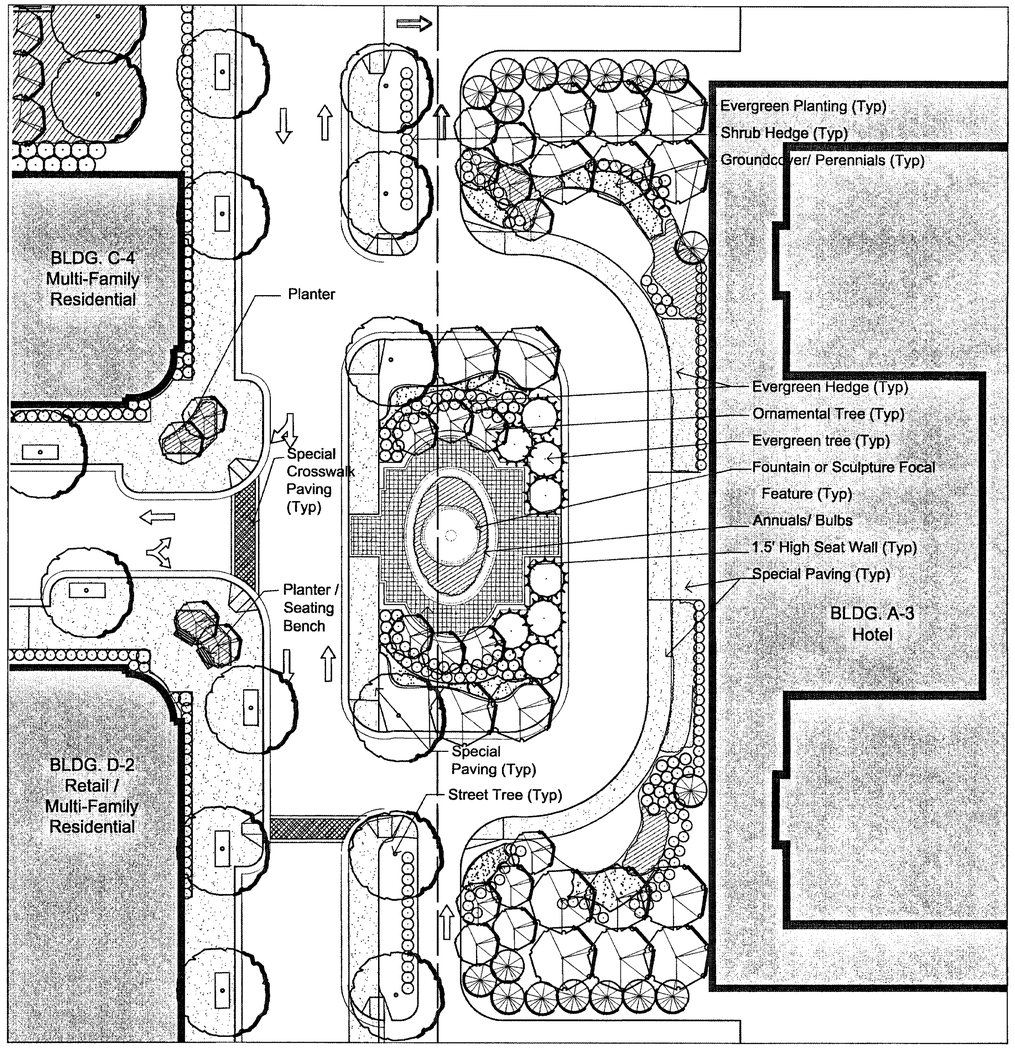
DESIGN	REL	SURVEY	PHR+A
DRAWN	REL	DATE	June 3, 2002
CHECKED	DHS	SCALE	AS SHOWN
SHEET	9 OF 27	FILE NO.	09752-2-4



1 OPEN SPACE AT OFFICE BUILDINGS: PLAN DETAIL
SCALE: 1" = 20'



3 OPEN SPACE AT RETAIL: PLAN DETAIL
SCALE: 1" = 20'



2 LANDSCAPE AMENITY AT HOTEL ENTRANCE: PLAN DETAIL
SCALE: 1" = 20'

The landscape features show the general intent and character of the proposed development and may vary with final building design, site plan and/or possible marketing / trademark design features desired by the end users.

Application No. FDP 2002-HM-043 Staff A. Slrider
APPROVED DEVELOPMENT PLAN
(DP) (GDP) ((CDP)) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 10 of 27
FDP 2002-HM-043
BC dated: 11/9/2005
PC approval: 11/30/2005

20' 0' 10' 20' 40' 60'

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REVISION

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
No. 609
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
LANDBAY A
SITE AMENITIES

DAVIS ■ CARTER ■ SCOTT
ARCHITECTURE AND INTERIOR ARCHITECTURE
Davis, Carter, Scott Ltd
1676 International Drive, Suite 500, McLean, Virginia 22102 ■ 703.556.9275
805 Fifteenth Street, N.W., Suite 1100, Washington, D.C. 20005 ■ 202.682.2300

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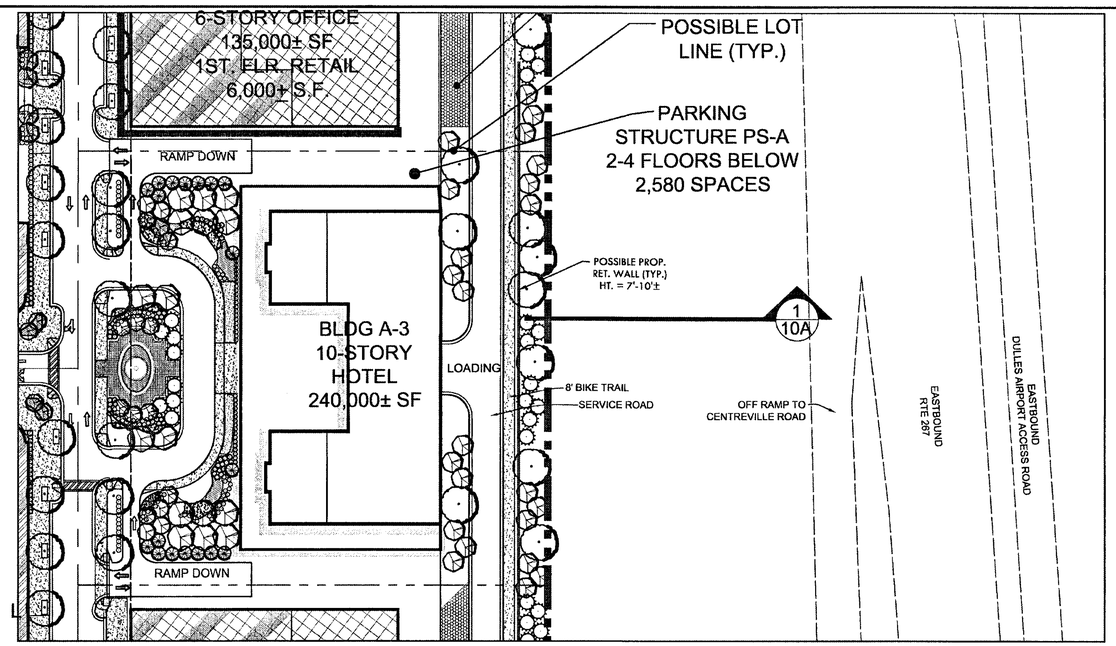
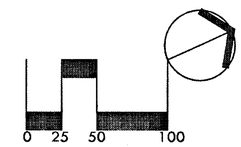
F 703.449.8714

LANDBAY REFERENCE DIAGRAM
Scale 1"=800'
B C D E-F G A

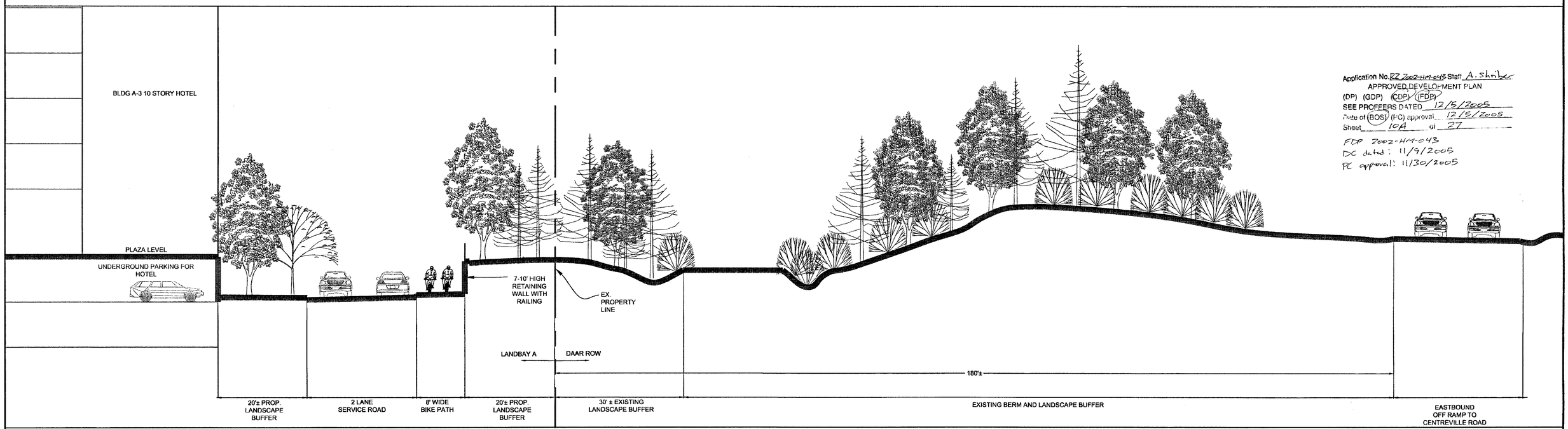
CO. PLAN

DESIGN	REL	SURVEY	PHR+A
DRAWN	REL	DATE	June 3, 2002
CHECKED	DHS	SCALE	1"=20'
SHEET	10 OF 27	FILE NO.	09752-2-4



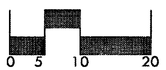


PLAN AT DULLES TOLL ROAD



Application No. RZ 2002-HM-043 Staff A. Shriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (FC) approval 12/5/2005
Sheet 10A of 27
FDP 2002-HM-043
DC dated: 11/9/2005
PC approval: 11/30/2005

1 SECTION AT DULLES TOLL ROAD



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10	Address County Comments	8/22/05				
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COMMONWEALTH OF VIRGINIA
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10-28-05
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CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
LANDBAY A
PLAN AND SECTION AT
DULLES TOLL ROAD

DAVIS ■ CARTER ■ SCOTT
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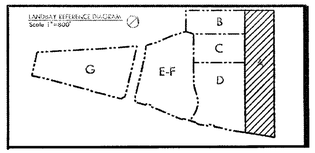
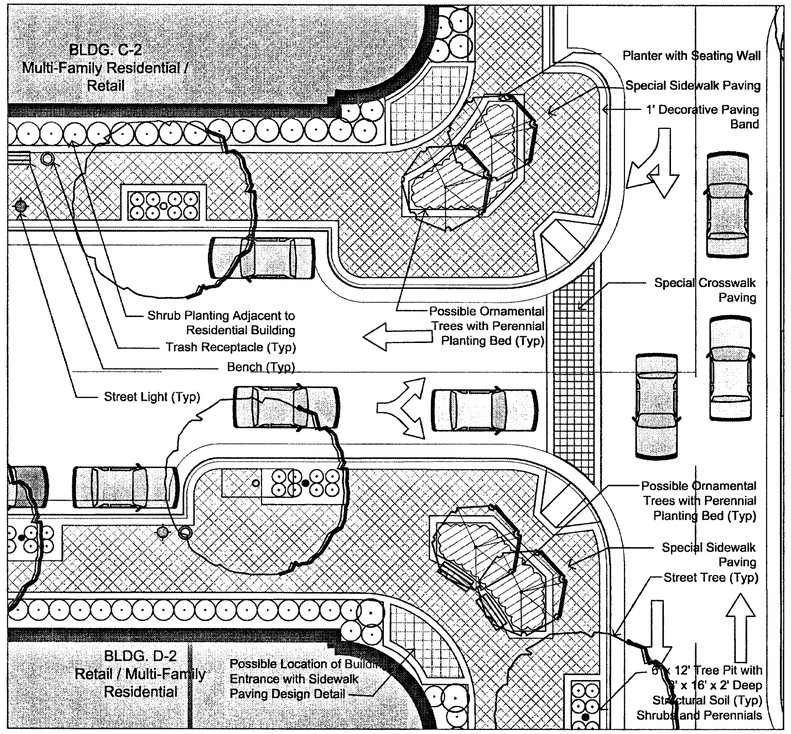


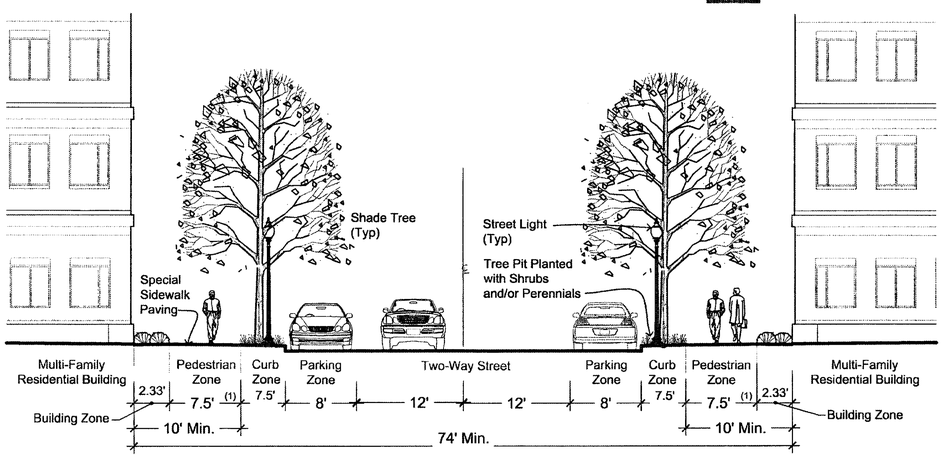
CO. PLAN #

DESIGN	SURVEY PHR+A
DRAWN REL	DATE June 3, 2002
CHECKED DHS	SCALE
SHEET 10A OF 27	FILE NO. 09752-2-4

Application No. RZ 2002-HM-043 Staff A. Striber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 11 of 27
FDP 2002-HM-043
BC dated: 11/9/2005
PC approval: 11/30/2005



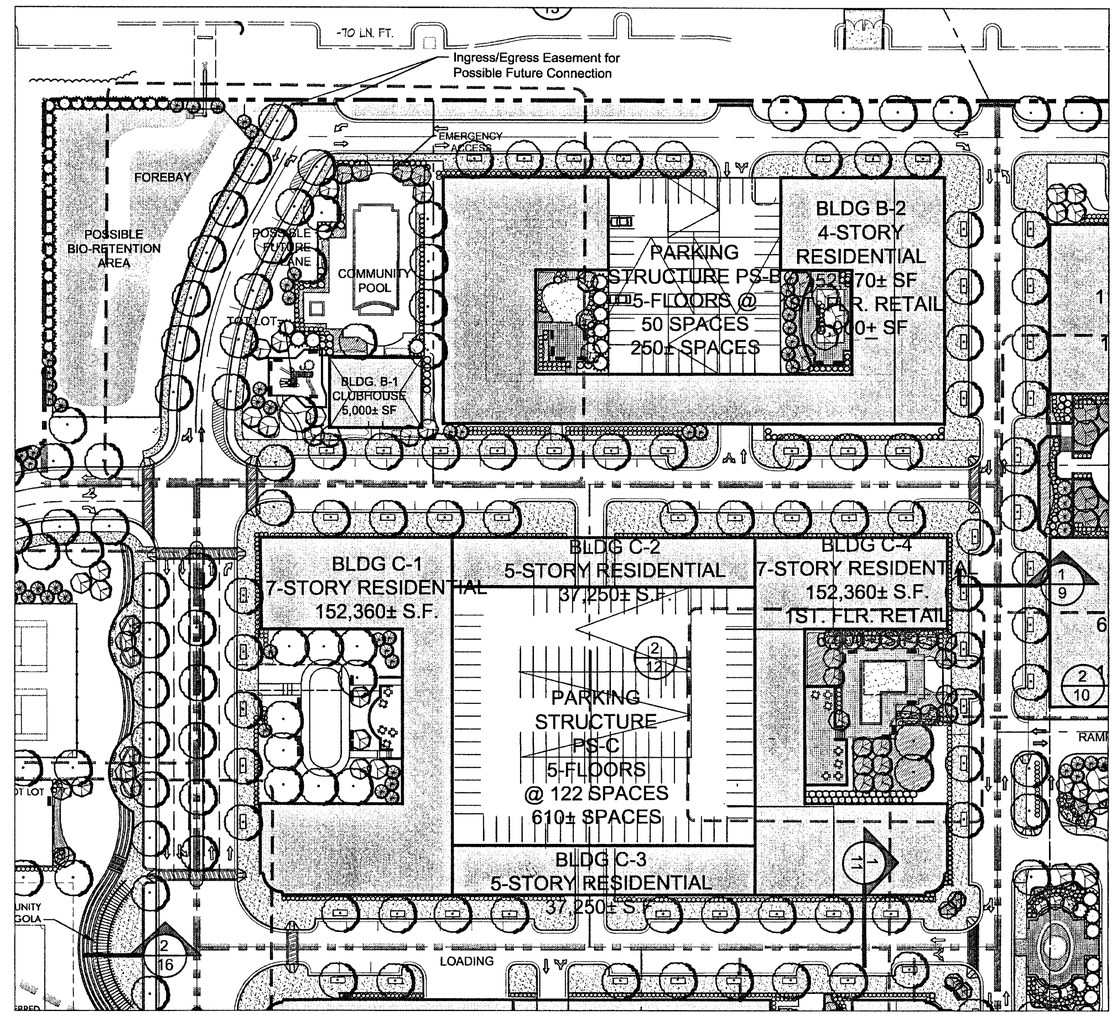
PLAN DETAIL
SCALE: 1" = 10'



SECTION
SCALE: 1/8" = 1'-0"

(1) May Be Reduced to 5.5' for Distances Up to 50' Linear Feet For Special Design Considerations.

1 MULTI-FAMILY RESIDENTIAL STREETSCAPE: PLAN DETAIL AND SECTION



2 LANDBAYS B & C: PLAN
SCALE: 1" = 50'

50' 0' 25' 50' 100' 150'

NO.	DESCRIPTION	DATE	REV'S'D	REV'W'D	APR'V'D	DATE
12	Address County Comments	10/28/05				
11	Address County Comments	10/14/05				
10	Address County Comments	8/22/05				
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COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
No. 609
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
LANDBAYS B AND C
PLAN AND SECTION

DAVIS ■ CARTER ■ SCOTT
ARCHITECTURE AND INTERIOR ARCHITECTURE
Davis, Carter, Scott Ltd
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T 703.449.6700
F 703.449.6714

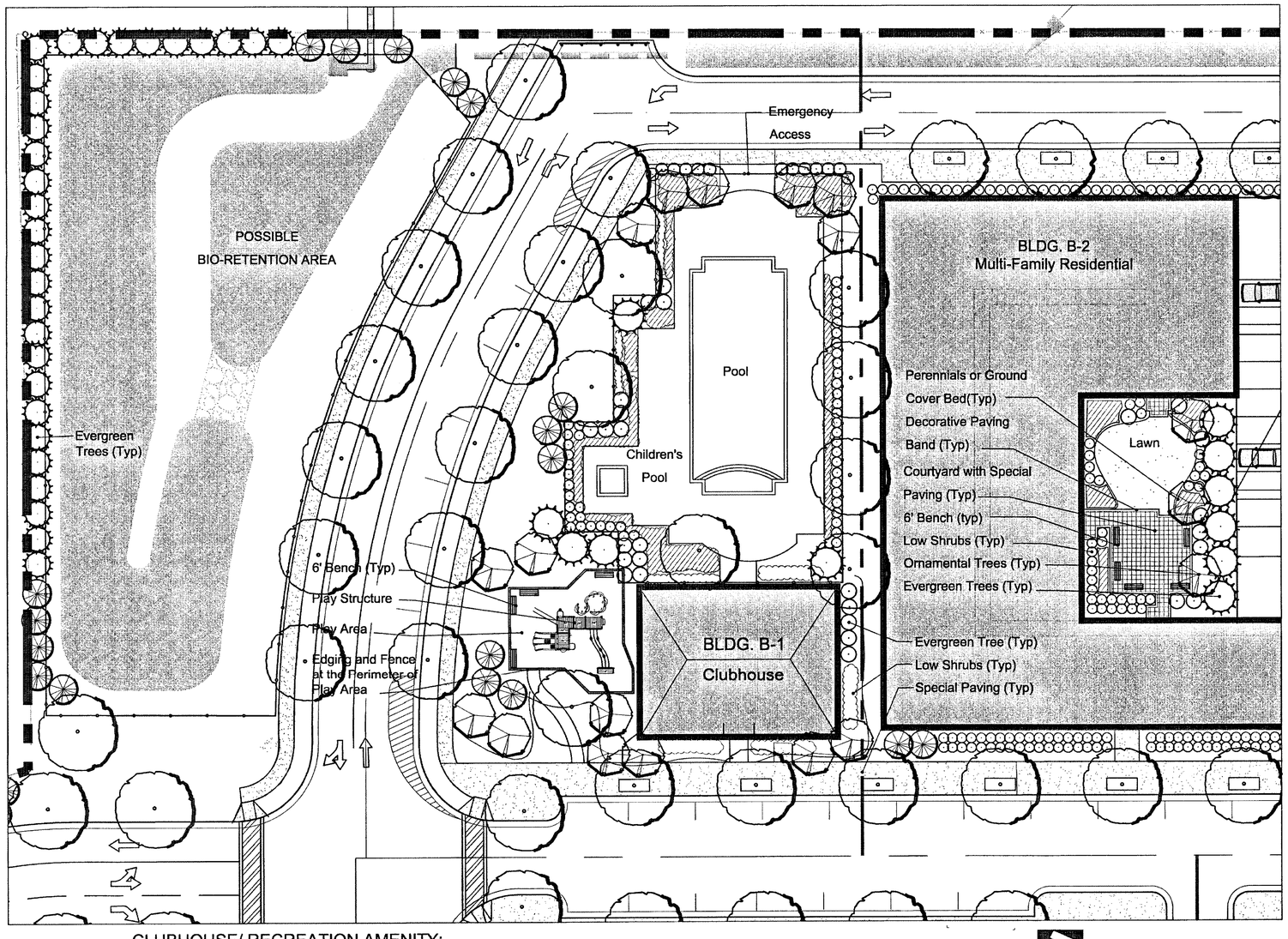
LANDBAY REFERENCE DIAGRAM
Scale 1"=800'
G E-F D C B A

CO. PLAN

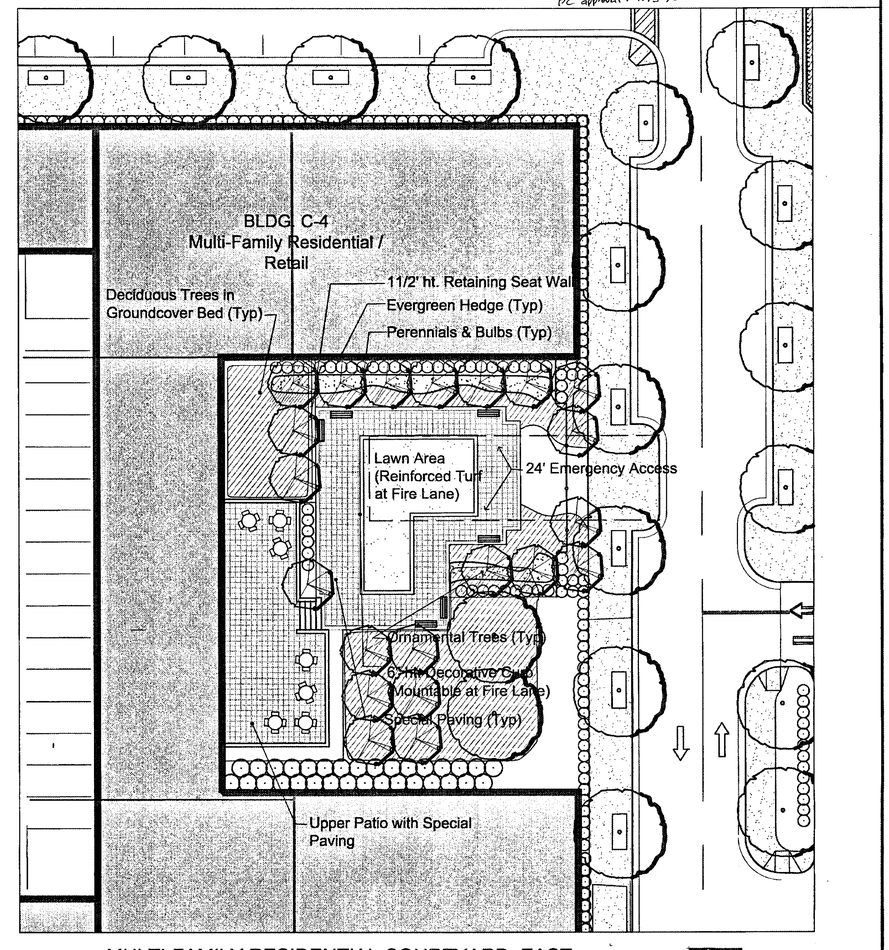
DESIGN	REL	SURVEY	PHR+A
DRAWN	REL	DATE	June 3, 2002
CHECKED	DHS	SCALE	AS SHOWN
SHEET	11 OF 27	FILE NO.	09752-2-4

The landscape features show the general intent and character of the proposed development and may vary with final building design, site plan and/or possible marketing / trademark design features desired by the end users.

Application No. RZ 2002-NM-043 Staff A. Shriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 12 of 27
FDP 2002-NM-043
DC dated: 11/9/2005
PC approval: 11/30/2005



1 CLUBHOUSE/ RECREATION AMENITY:
LANDBAY B
SCALE: 1" = 20'



2 MULTI-FAMILY RESIDENTIAL COURTYARD EAST:
DETAIL PLAN
SCALE: 1" = 20'

20' 0' 10' 20' 40' 60'

NO.	DESCRIPTION	DATE	REVS'D	REVW'D	APRV'D	DATE
12	Address County Comments	10/28/05				
11	Address County Comments	10/14/05				
10	Address County Comments	8/22/05				
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REVISION

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COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
No. 609
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
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ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
LANDBAYS B AND C
SITE AMENITIES

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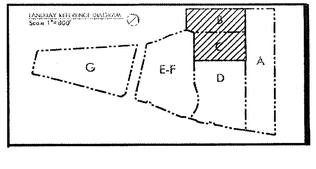
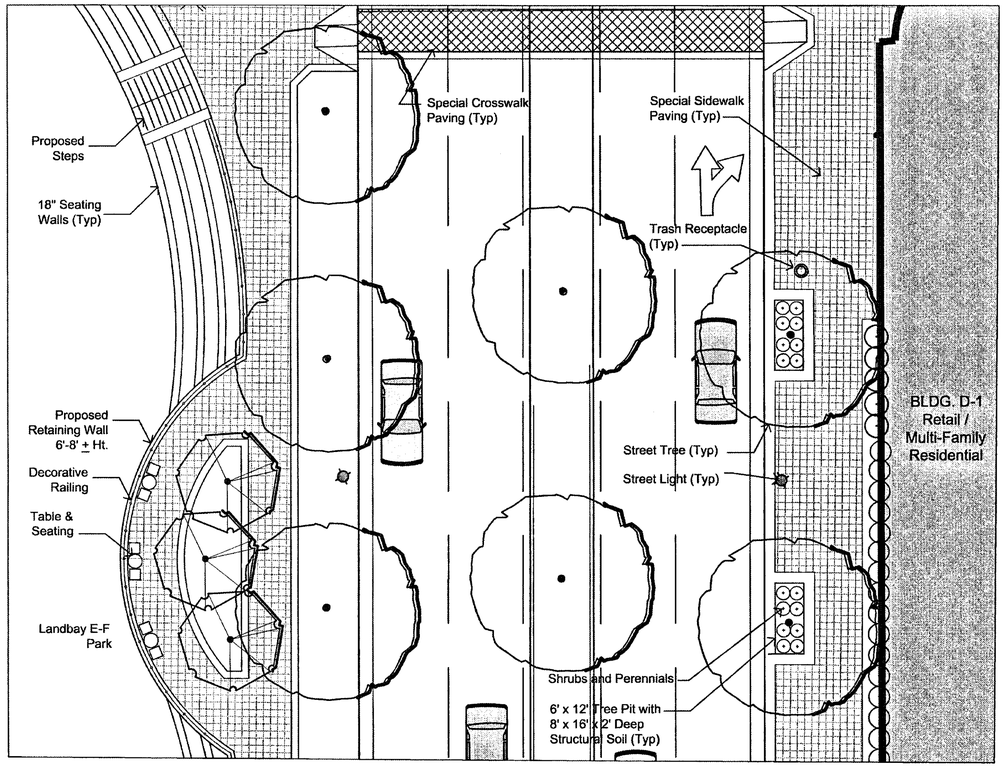


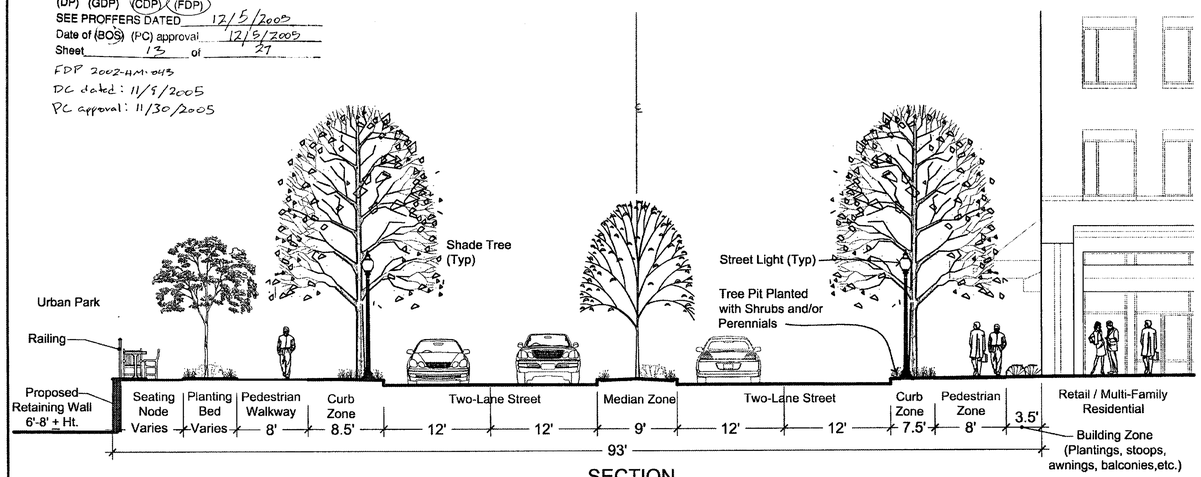
CO. PLAN

DESIGN	REL	SURVEY	PHR+A
DRAWN	REL	DATE	June 3, 2002
CHECKED	DHS	SCALE	1"=20'
SHEET	12 OF 27	FILE NO.	09752-2-4



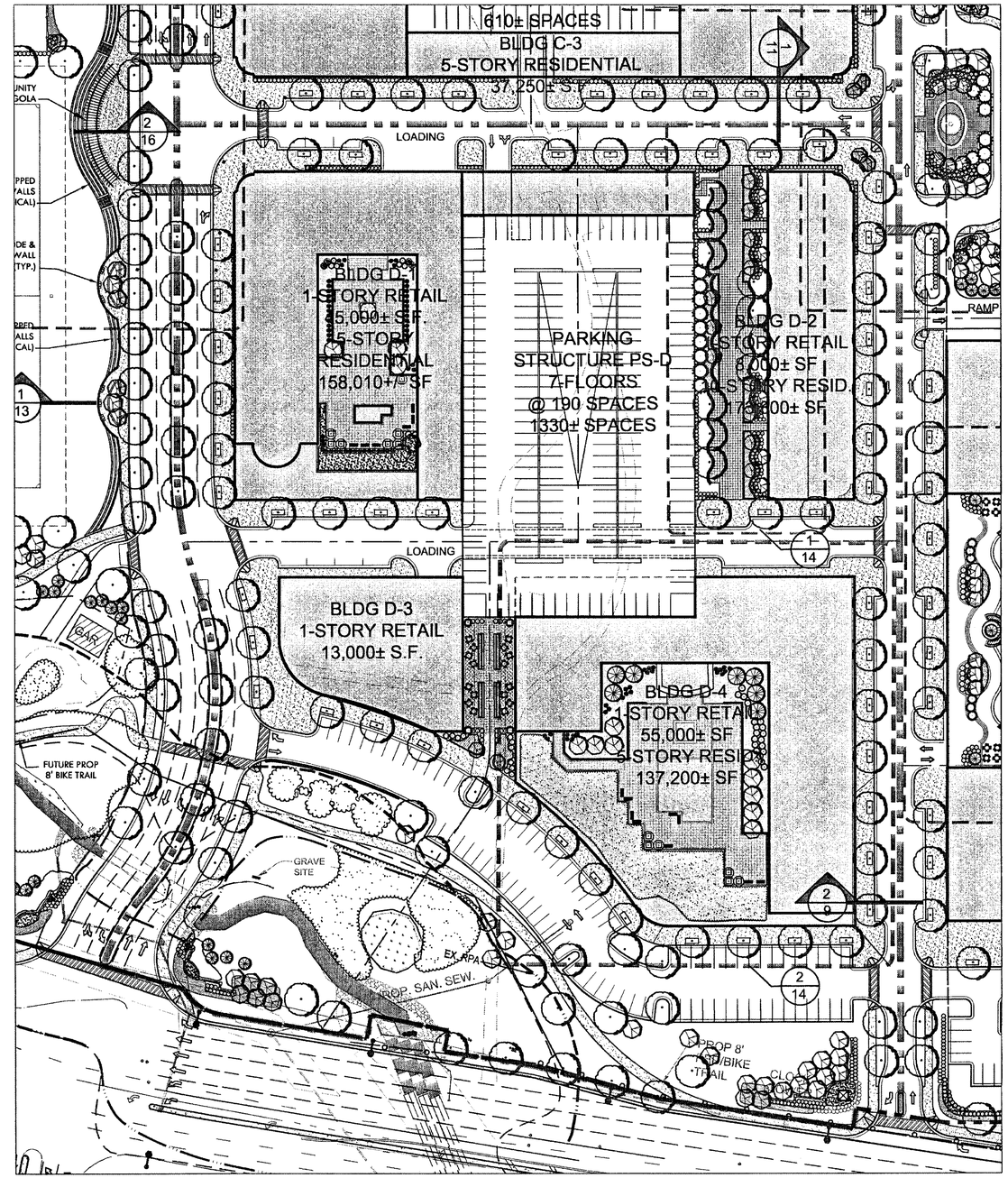
PLAN DETAIL
SCALE: 1" = 10'

Application No. RZ 2002-HM-045 Staff A. Shrider
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 13 of 27
FDP 2002-HM-045
DC dated: 11/5/2005
PC approval: 11/30/2005



SECTION
SCALE: 1/8" = 1'-0"

1 URBAN PARK - RETAIL / MULTI-FAMILY STREETSCAPE: PLAN DETAIL AND SECTION



2 LANDBAY D: PLAN

50' 0' 25' 50' 100' 150'

NO.	DESCRIPTION	DATE	REVS'D	REVW'D	APRV'D	DATE
12	Address County Comments	10/28/05				
11	Address County Comments	10/14/05				
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REVISION

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
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10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
LANDBAY D
PLAN AND SECTION

DAVIS ■ CARTER ■ SCOTT
ARCHITECTURE AND INTERIOR ARCHITECTURE
Davis, Carter, Scott Ltd
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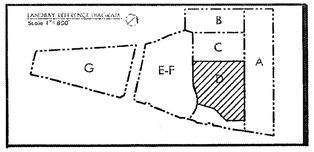
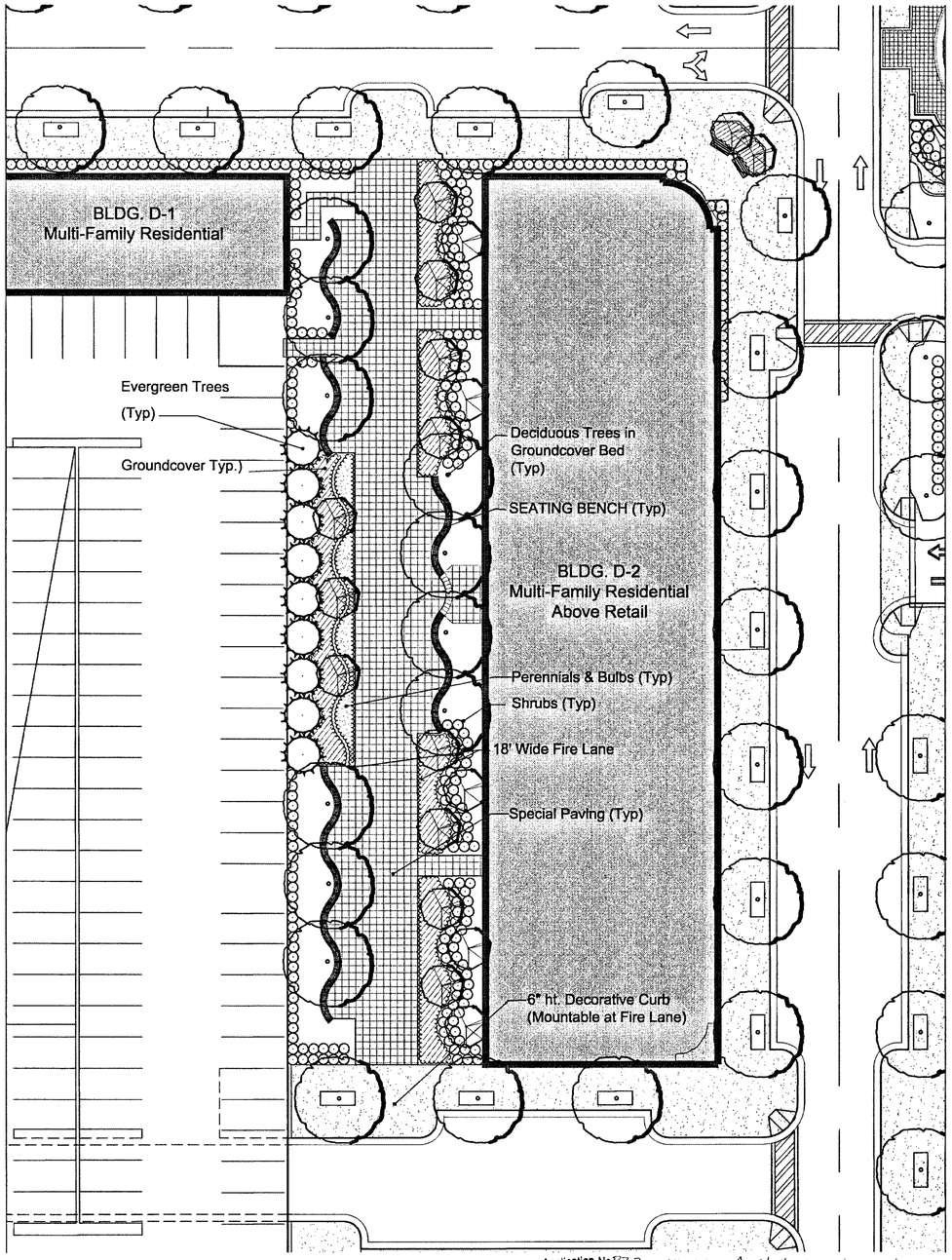
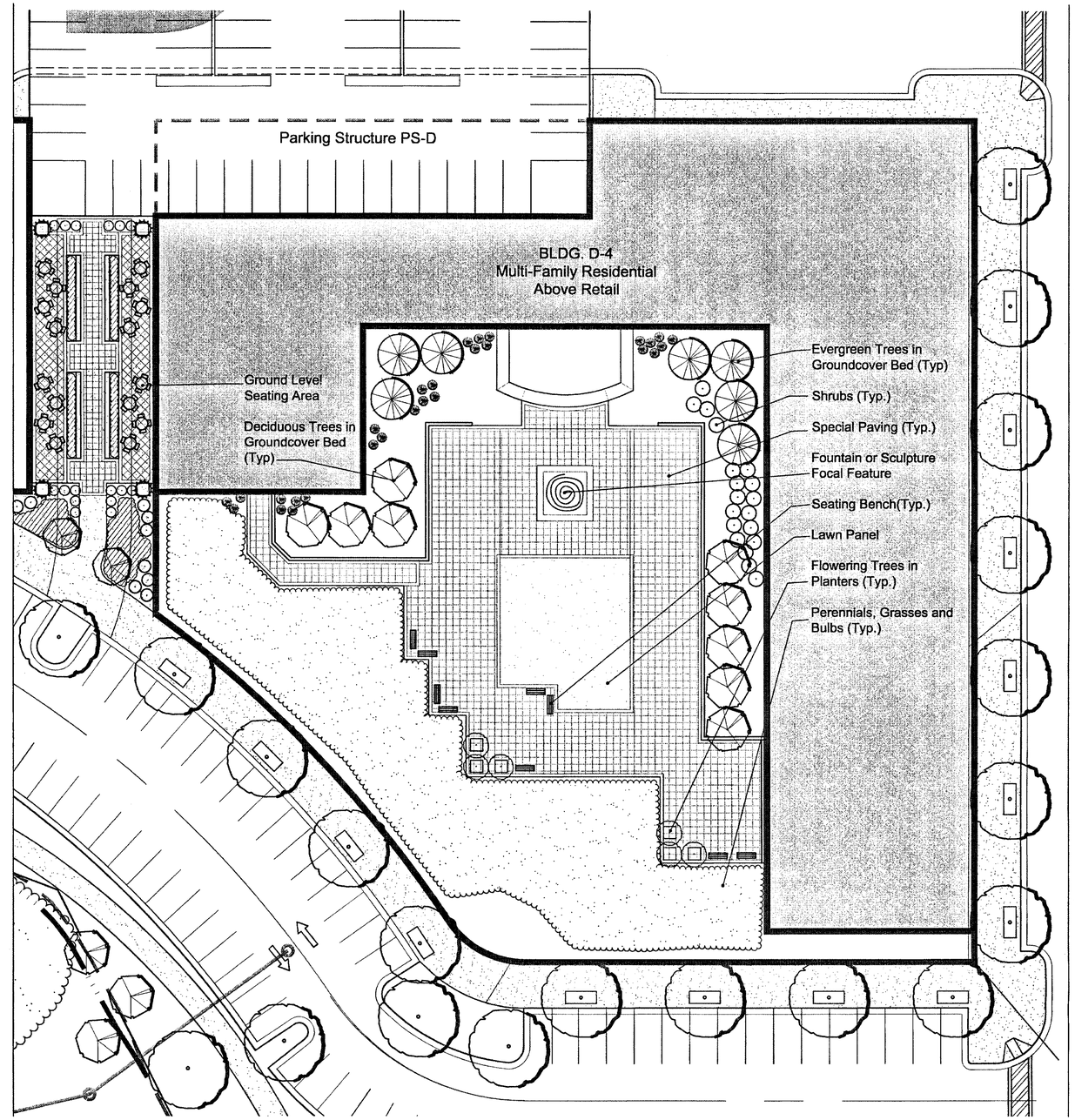


CO. PLAN

DESIGN	REL	SURVEY	PHR+A
DRAWN	REL	DATE	June 3, 2002
CHECKED	DHS	SCALE	AS SHOWN
SHEET	13OF 27	FILE NO.	09752-2-4



1 LANDBAY D: PEDESTRIAN PLAZA PLAN DETAIL
SCALE: 1" = 20'



2 LANDBAY D: ROOFTOP GARDEN / PLAZA PLAN DETAIL
SCALE: 1" = 20'

The landscape features show the general intent and character of the proposed development and may vary with final building design, site plan and/or possible marketing / trademark design features desired by the end users.

20' 0' 10' 20' 40' 60'

Application No. RZ 2002-HM-043 Staff Ar Shriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
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Sheet 14 of 27
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REVISION

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No. 609
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

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ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

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SITE AMENITIES

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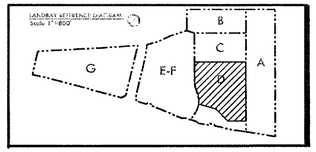
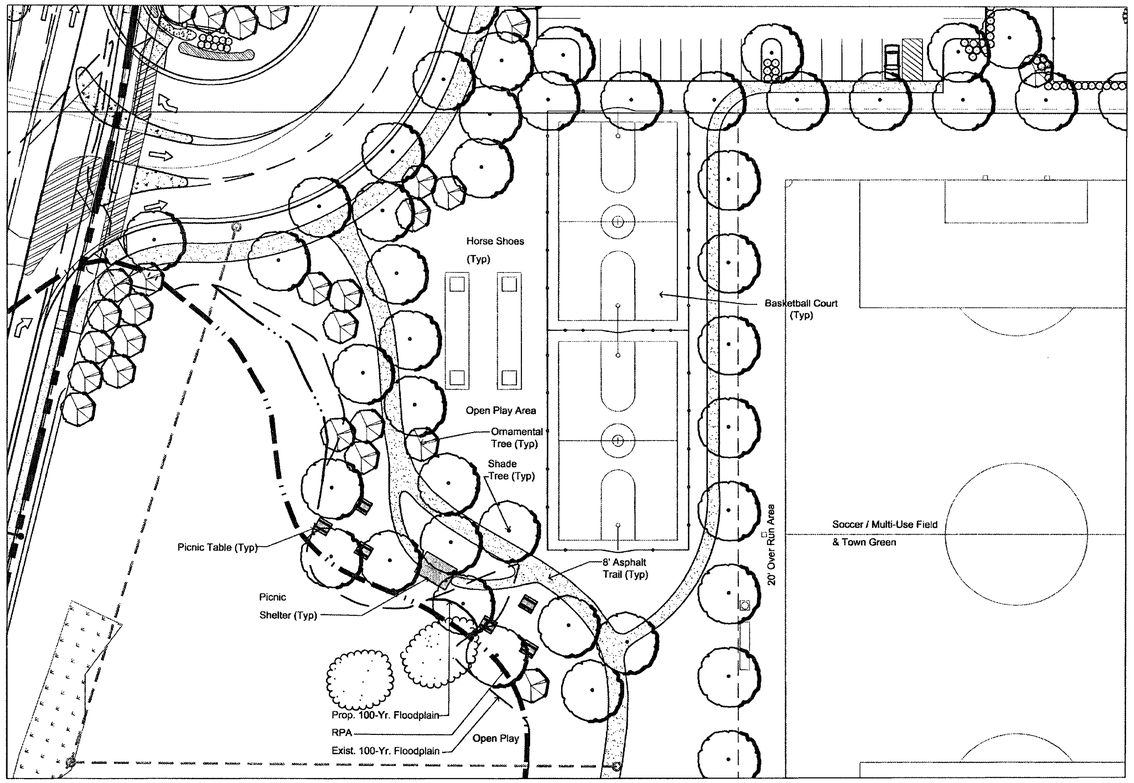
PHR+A
14532 Lee Road
Chantilly, VA 20151-1679
T 703.449.6700
F 703.449.6714

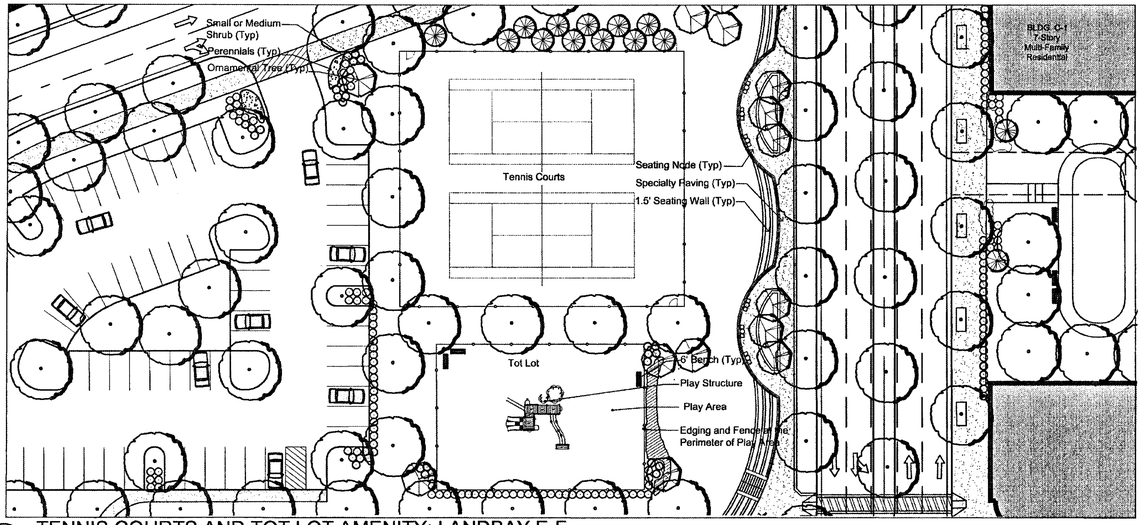


CO. PLAN

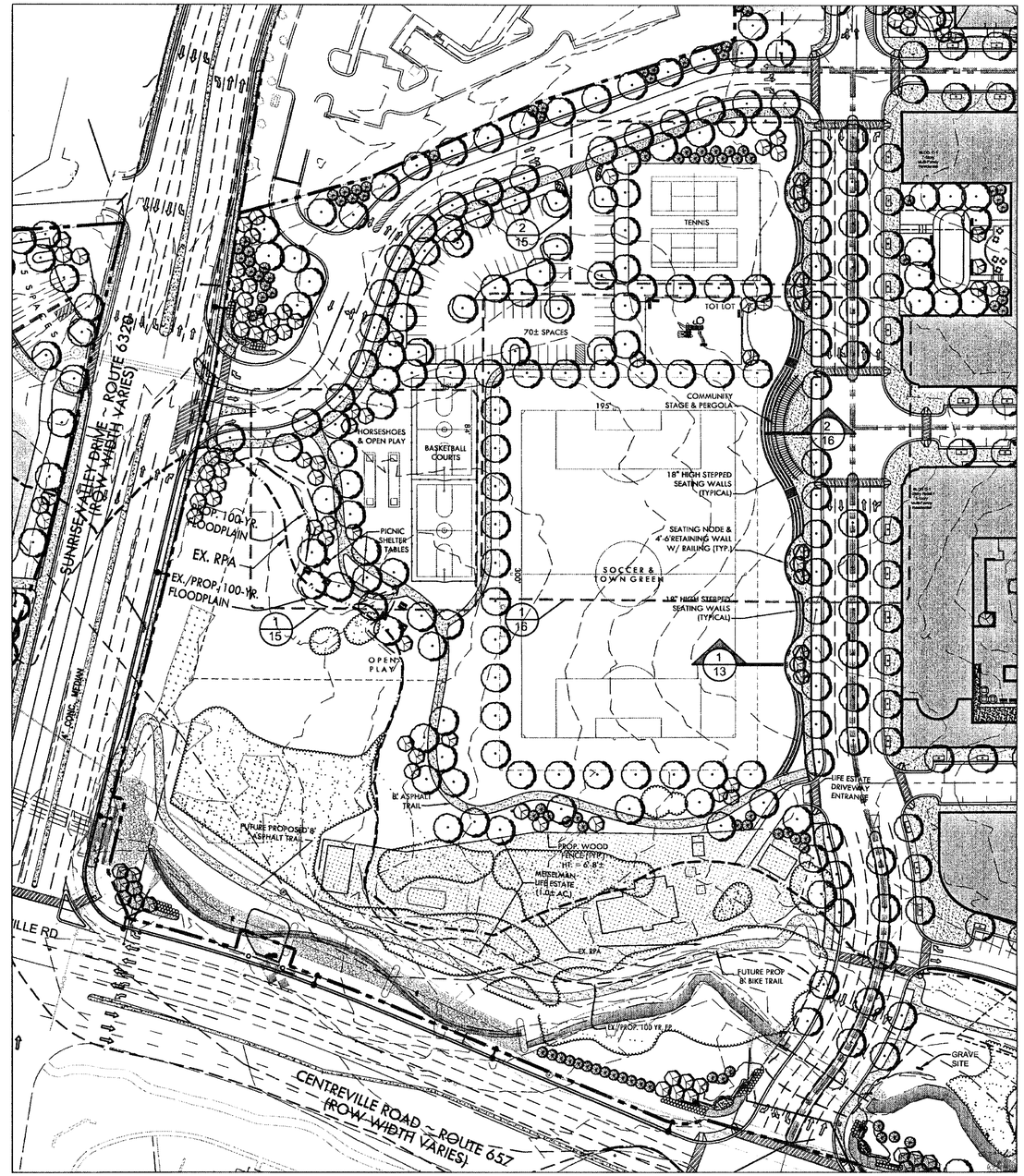
DESIGN	REL	SURVEY	PHR+A
DRAWN	REL	DATE	June 3, 2002
CHECKED	DHS	SCALE	AS SHOWN
SHEET	14 OF 27	FILE NO.	09752-2-4



1 PICNIC SHELTER AND RECREATION AREA AMENITY: LANDBAY E-F
SCALE: 1" = 30'



3 TENNIS COURTS AND TOT LOT AMENITY: LANDBAY E-F
SCALE: 1" = 30"



4 LANDBAY E - F: PLAN
SCALE: 1" = 50'

60' 0' 30' 60' 120' 180'

Application No. RZ 2002-HM-043 Staff A. Shriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (ROS) (DP) approval 12/5/2005
Sheet 15 of 27

NO.	DESCRIPTION	DATE	REVS'D	REVW'D	APRV'D	DATE
12	Address County Comments	10/28/05				
11	Address County Comments	10/14/05				
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4	Address County Comments	6/15/04				
3	Revised Submission-1.83M SF	4/13/04				
2	Revised Submission-2.27M SF	4/25/03				
1	Initial Submission-2.56M SF	11/22/02				

REVISION

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
No. 609
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
FDP 2002-HM-043
DC dated: 11/9/2005
PC approval: 11/30/2005
LANDBAY E - F
SITE AMENITIES

DAVIS ■ CARTER ■ SCOTT
ARCHITECTURE AND INTERIOR ARCHITECTURE
Davis, Carter, Scott Ltd
1676 International Drive, Suite 500, McLean, Virginia 22102 ■ 703.556.9275
805 Fifteenth Street, N.W., Suite 1100, Washington, D.C. 20005 ■ 202.682.2300

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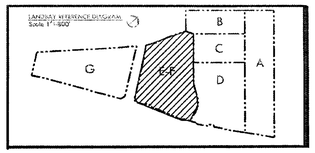
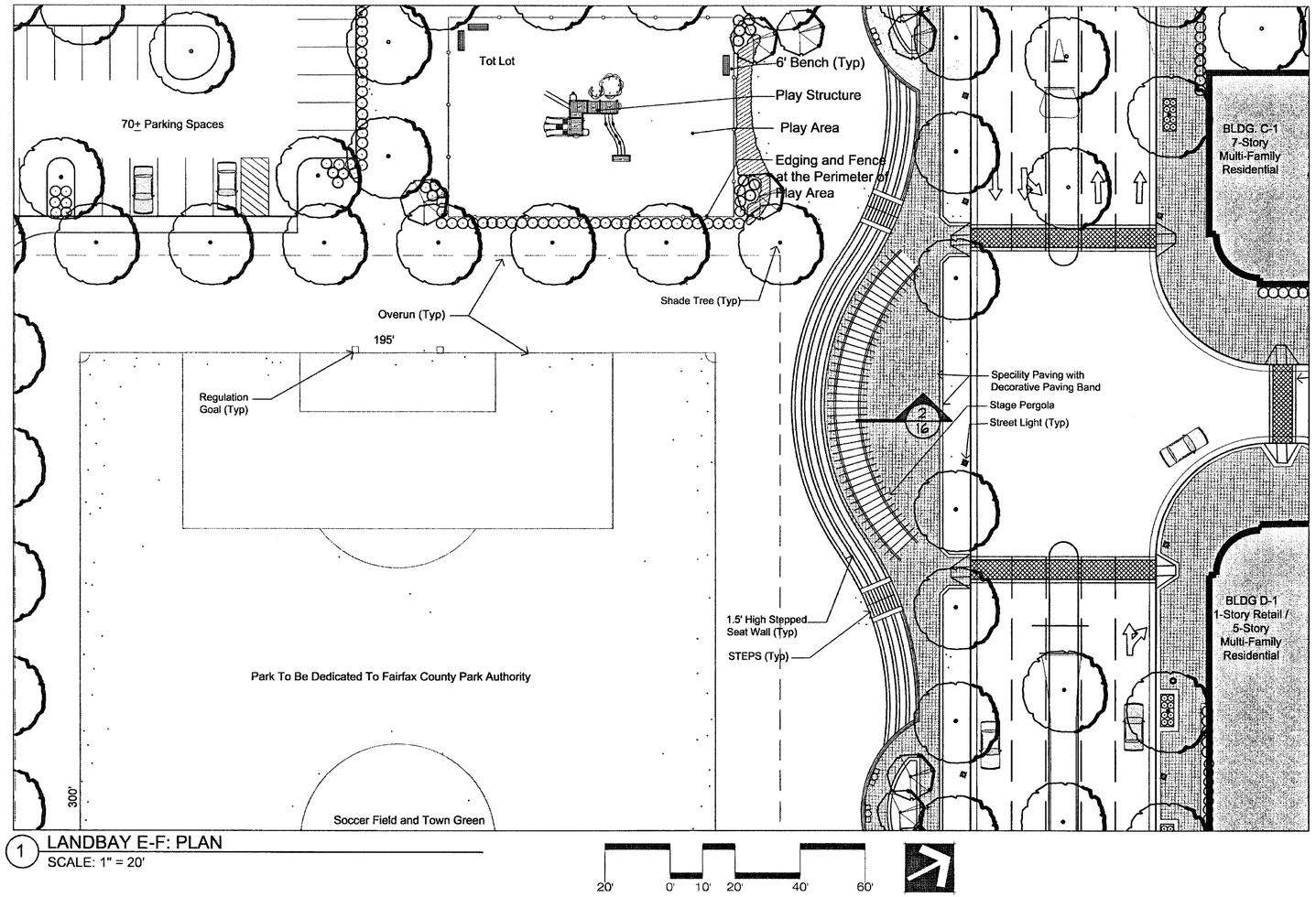


CO. PLAN #

DESIGN	REL	SURVEY	PHR+A
DRAWN	REL	DATE	June 3, 2002
CHECKED	DHS	SCALE	AS SHOWN
SHEET	15 OF 27	FILE NO.	09752-2-4



1 LANDBAY E-F: PLAN
SCALE: 1" = 20'

Application No. RZ 2002-HT-043 Staff A. Shaikh
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
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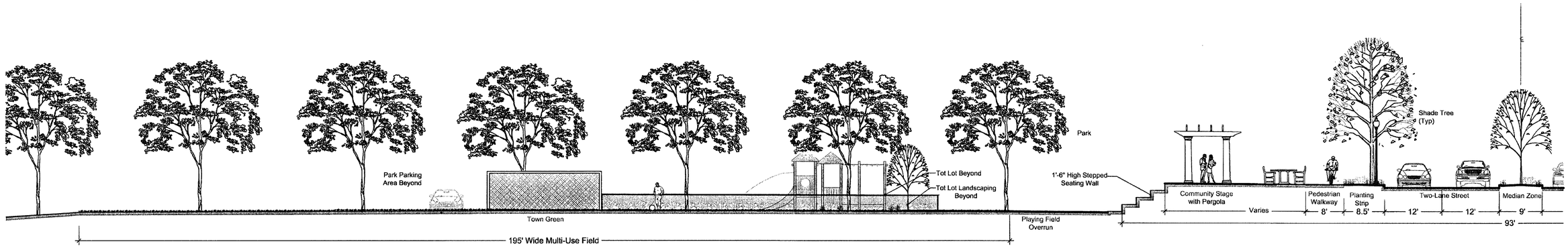
Sheet 16 of 27



PARK - COMMUNITY STAGE : SECTION
SCALE: 1" = 10'

2

NO.	DESCRIPTION	DATE	REV'S'D	REV'W'D	APRV'D	DATE
12	Address County Comments	10/28/05				
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HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
LANDBAY E-F
PLAN AND SECTION

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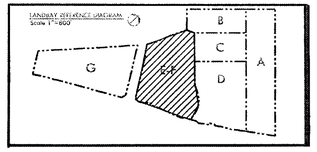
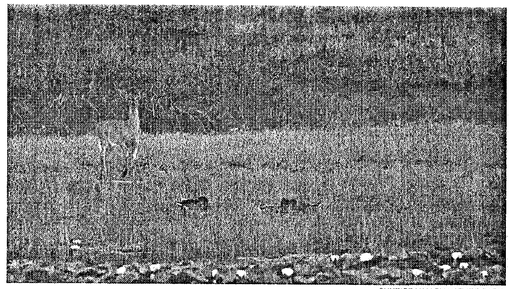
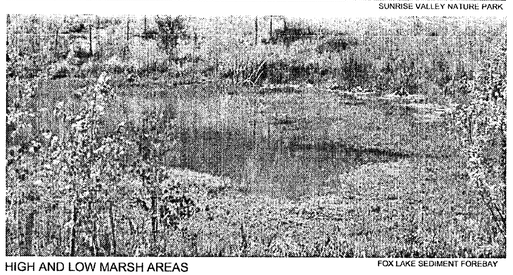


CO. PLAN #

DESIGN REL	SURVEY PHR+A
DRAWN REL	DATE June 3, 2002
CHECKED DHS	SCALE AS SHOWN
SHEET 16 OF 27	FILE NO. 09752-2-4

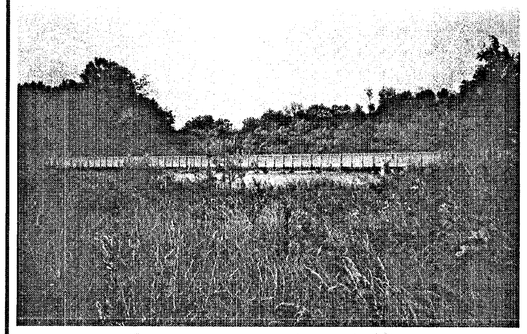


SUNRISE VALLEY NATURE PARK



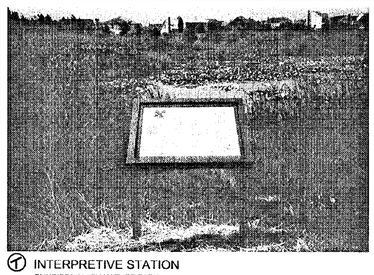
HIGH AND LOW MARSH AREAS

FOX LAKE SEDIMENT FOREBAY



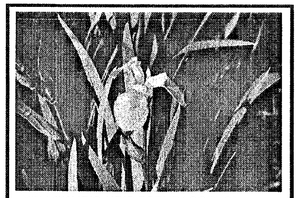
BOARDWALK

SUNRISE VALLEY NATURE PARK



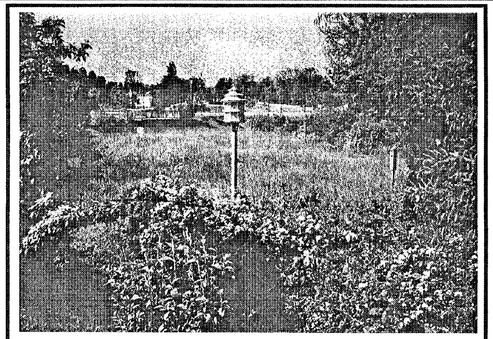
① INTERPRETIVE STATION

SUNRISE VALLEY NATURE PARK



YELLOW IRIS (*IRIS PSEUDACORUS*)

JULIE J. METZ WETLANDS BANK - HIGH MARSH

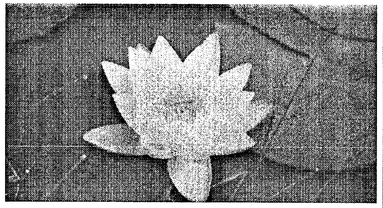


BUTTERFLY GARDEN

BROADLANDS STORMWATER MANAGEMENT POND #3

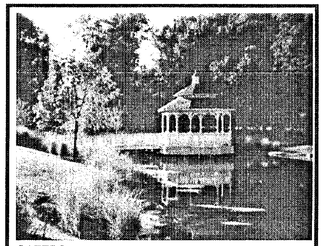
NATURE TRAIL

BROADLANDS STORMWATER MANAGEMENT POND #3



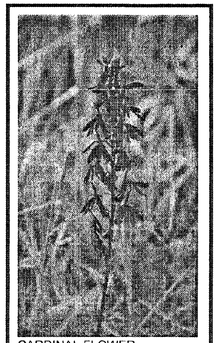
FRAGRANT WATER LILLY (*NYMPHAEA ODORATA*)

SUNRISE VALLEY NATURE PARK - MICROPOOL/FOREBAY



GAZEBO

HERITAGE HUNT



CARDINAL FLOWER

(*LOBELIA CARDINALIS*)

HIGH MARSH AT STRINGFELLOW ROAD MITIGATION AREA

ARROW ARUM

(*PELTANDRA VIRGINICA*)

HIGH MARSH AT SUNRISE VALLEY NATURE PARK

Application No. RZ 2002-HM-012 Staff A. Shiba

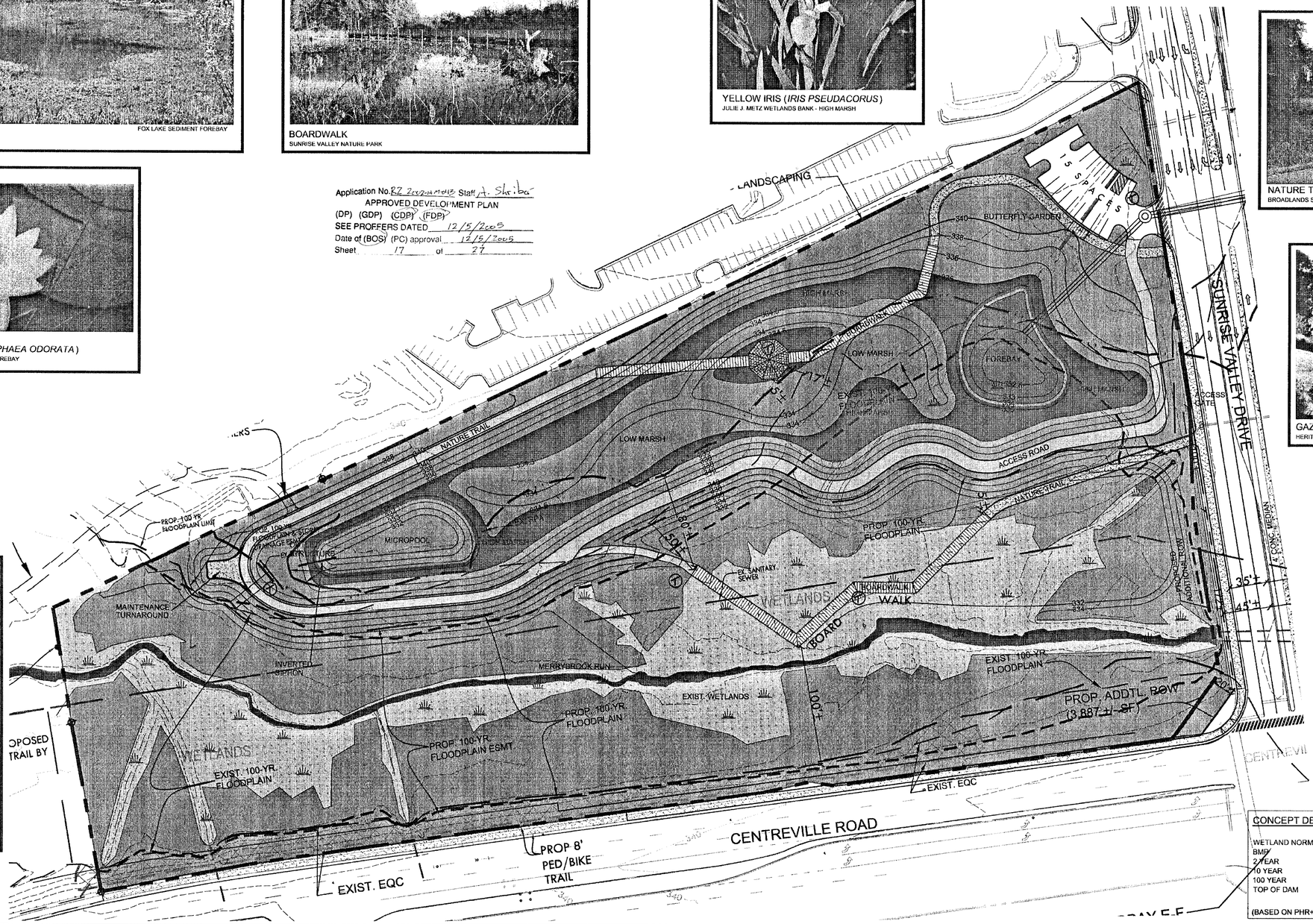
APPROVED DEVELOPMENT PLAN

(DP) (GDP) (CDP) (FDP)

SEE PROFFERS DATED 12/5/2005

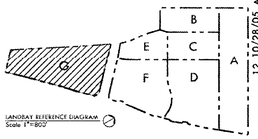
Date of (BOS) (PC) approval 12/5/2005

Sheet 17 of 27



CONCEPT DESIGN WATER SURFACE ELEVATIONS (WSE):		
	ELEVATION	VOLUME*
WETLAND NORMAL POOL	334.50'	N.I.C.
BMP	335.14'	86,000
2 YEAR	335.63'	106,000
10 YEAR	336.48'	192,000
100 YEAR	337.38'	286,000
TOP OF DAM	340.00'	-

(BASED ON PHR+A CONCEPT DESIGN VOLUMES) *CUMULATIVE



LANDBAY REFERENCE DIAGRAM Scale 1"=800'

Wetland Studies and Solutions, Inc.

14088-N Sullyfield Circle, Chantilly, Virginia 20151

Phone 703.631.5800 Fax 703.631.5804

www.wetlandstudies.com

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ARROWBROOK CENTRE

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LANDBAY G

PLAN & AMENITIES

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COMMONWEALTH OF VIRGINIA

DAVID H. STEIGLER

No. 609

10-28-05

CERTIFIED LANDSCAPE ARCHITECT

This plan is being sealed by PHR+A only for inclusion in the plan set. The plan was prepared by WSSI.

REVISIONS

No.	Date	Description	Rev. By:	App. By:
12	10/28/05	Address County Comments		
8	6/1/05	Address County Comments		
7	4/28/05	Address County Comments		
6	4/04/05	Address County Comments		
5	1/24/05	Address County Comments		
4	6/15/04	Address County Comments		
3	4/13/04	Revised Submission-1.83M SF		
2	4/25/03	Revised Submission-2.27M SF		
1	11/22/02	Initial Submission-2.56M SF		

DATE: SEPTEMBER 2001

SCALE: 1" = 50'

Horizontal Datum: NAD 83

Vertical Datum: NGVD 29

Boundary and Topo Source: PHR&A

Design	Draft	Approved
BMC	BMC	MSR

Sheet #

17 of 27

Computer File Name:

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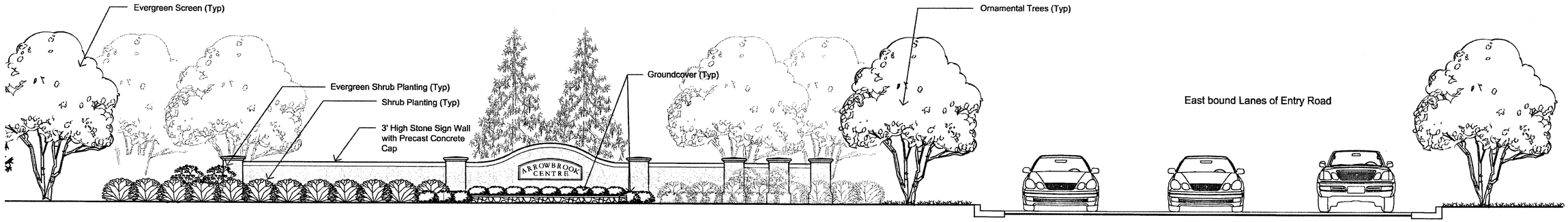
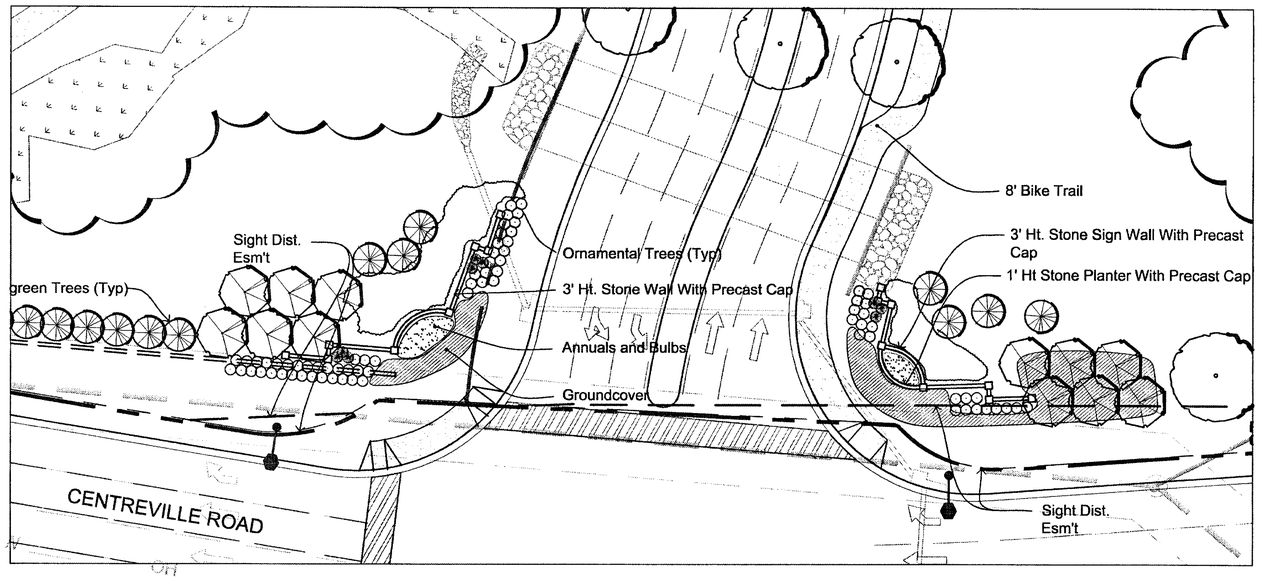


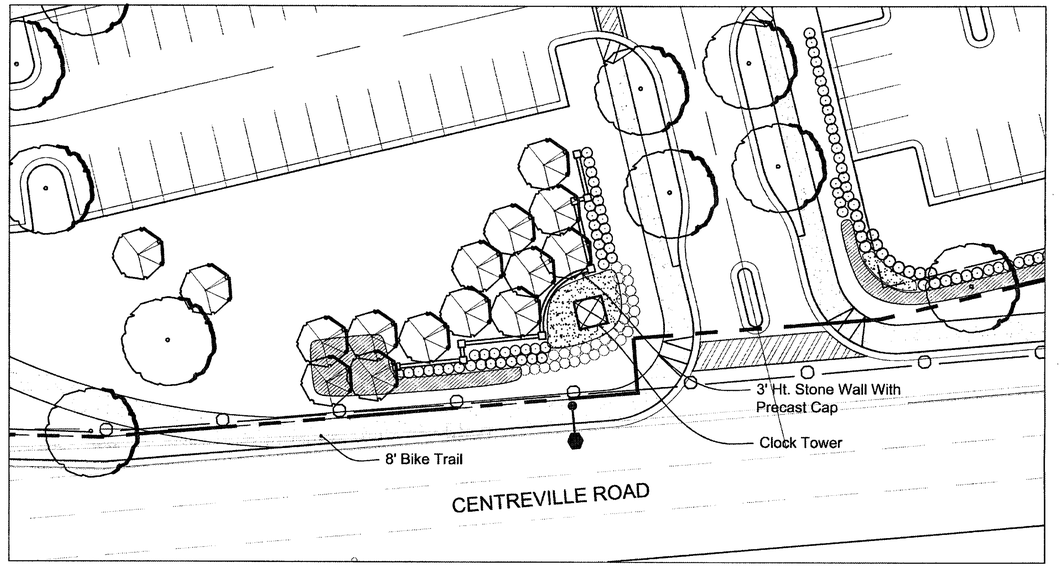
1 ELEVATION OF ENTRANCE WALL
SCALE: 1/4" = 1'-0"

Application No. RZ 2002-HM-043 Staff A. Skriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 18 of 27
FDP 2002-HM-043
DC dated: 11/7/2005
PC approval: 11/30/2005



2 ENTRANCE DETAIL PLAN
SCALE: 1" = 20'

20' 0' 10' 20' 40' 60'



3 CENTREVILLE ROAD STREETSCAPE AT NORTHEASTERN PORTION OF SITE
SCALE: 1"= 20'

20' 0' 10' 20' 40' 60'

NO.	DESCRIPTION	DATE	REVS'D	REVW'D	APRV'D	DATE
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CERTIFIED LANDSCAPE ARCHITECT

PROJECT
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ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
ENTRY FEATURE DETAILS

DAVIS ■ CARTER ■ SCOTT
ARCHITECTURE AND INTERIOR ARCHITECTURE
Davis, Carter, Scott Ltd
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805 Fifteenth Street, N.W., Suite 1100, Washington, D.C. 20005 ■ 202.682.2300

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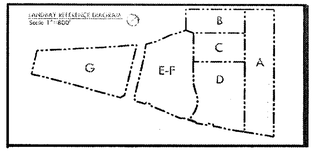
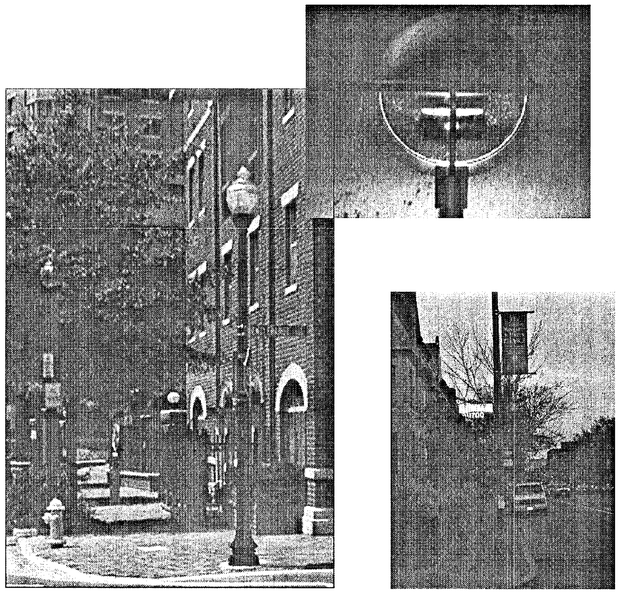


DESIGN		SURVEY	PHR+A
DRAWN	REL	DATE	June 3, 2002
CHECKED	DHS	SCALE	
SHEET	18 OF 27	FILE NO.	09752-2-4

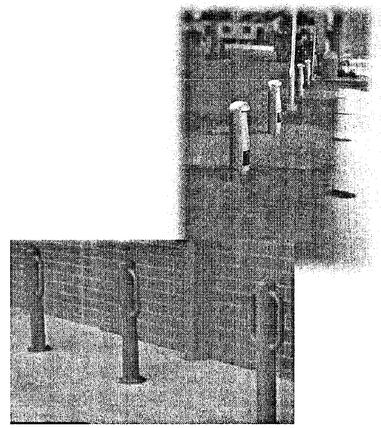
CO. PLAN #



SITE LIGHTING

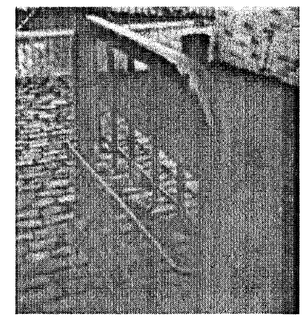
Distinctive lighting shall be provided in scale with pedestrian-oriented activities, and to enhance the street appearance and identity

Banners mounted to poles provide entrance accent feature and neighborhood identity



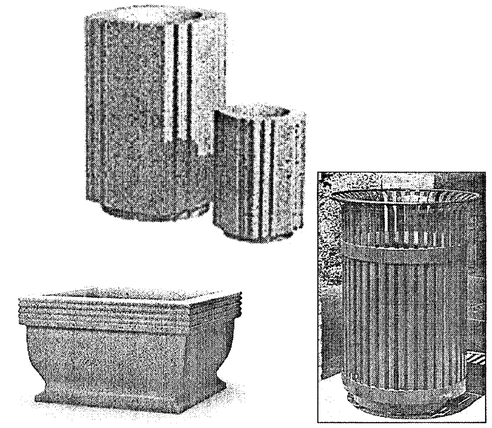
BOLLARDS

Provide amenities such as bollards that help separate pedestrian and vehicular traffic or even serve a dual use as bike racks.



BIKE RACKS

Provide site amenities which encourage non-vehicular modes of transportation and encourage pedestrian use of space



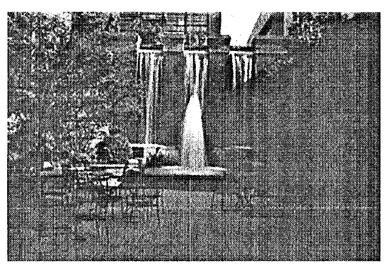
TRASH RECEPTACLE/ REMOVABLE PLANTERS

Site amenities shall complement architecture and enhance street appearance and identity

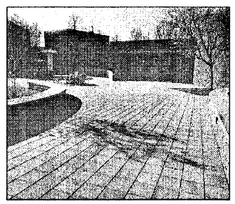
Application No. RZ 2002-NM-043 Staff A. Shriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 19 of 27
FDP 2002-NM-043
DC dated: 11/9/2005
PC approval: 11/30/2005

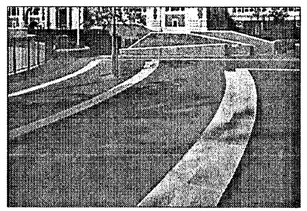
CENTRAL DESIGN FEATURES

Use central design features as focal points for site identity and as landmarks for users



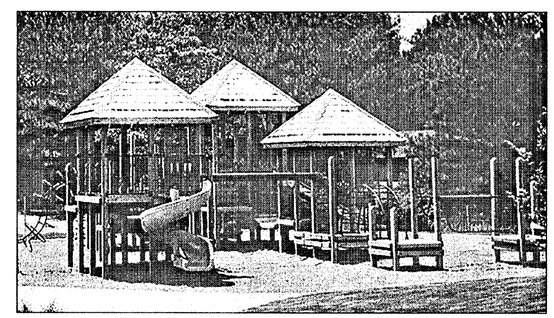
Use site furnishings and special design features to provide intimate atmoshpere and encourage pedestrian use of space.





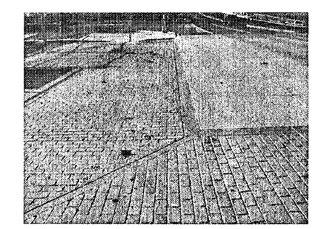
SPECIALTY SIDEWALK PAVING

Use paving materials that relate to pedestrian scale and delineate different uses



PLAYGROUND EQUIPMENT FOR TOT LOT

Playground equipment shall provide a variety of play activities for children of different ages. The materials, forms, and colors selected for the playground equipment shall complement the natural setting.



CROSSWALK PAVING

Clearly define pedestrian crosswalks with decorative pavements

THE PHOTOGRAPHS DEPICT POSSIBLE DESIGN FEATURES. STYLE AND TYPES OF SITE AMENITIES WILL BE CHOSEN AS PART OF FINAL SITE AND LANDSCAPE ARCHITECTURE DESIGN.

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COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
No. 609
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
SITE DETAILS

DAVIS ■ CARTER ■ SCOTT
ARCHITECTURE AND INTERIOR ARCHITECTURE
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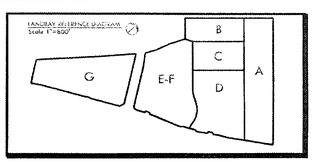
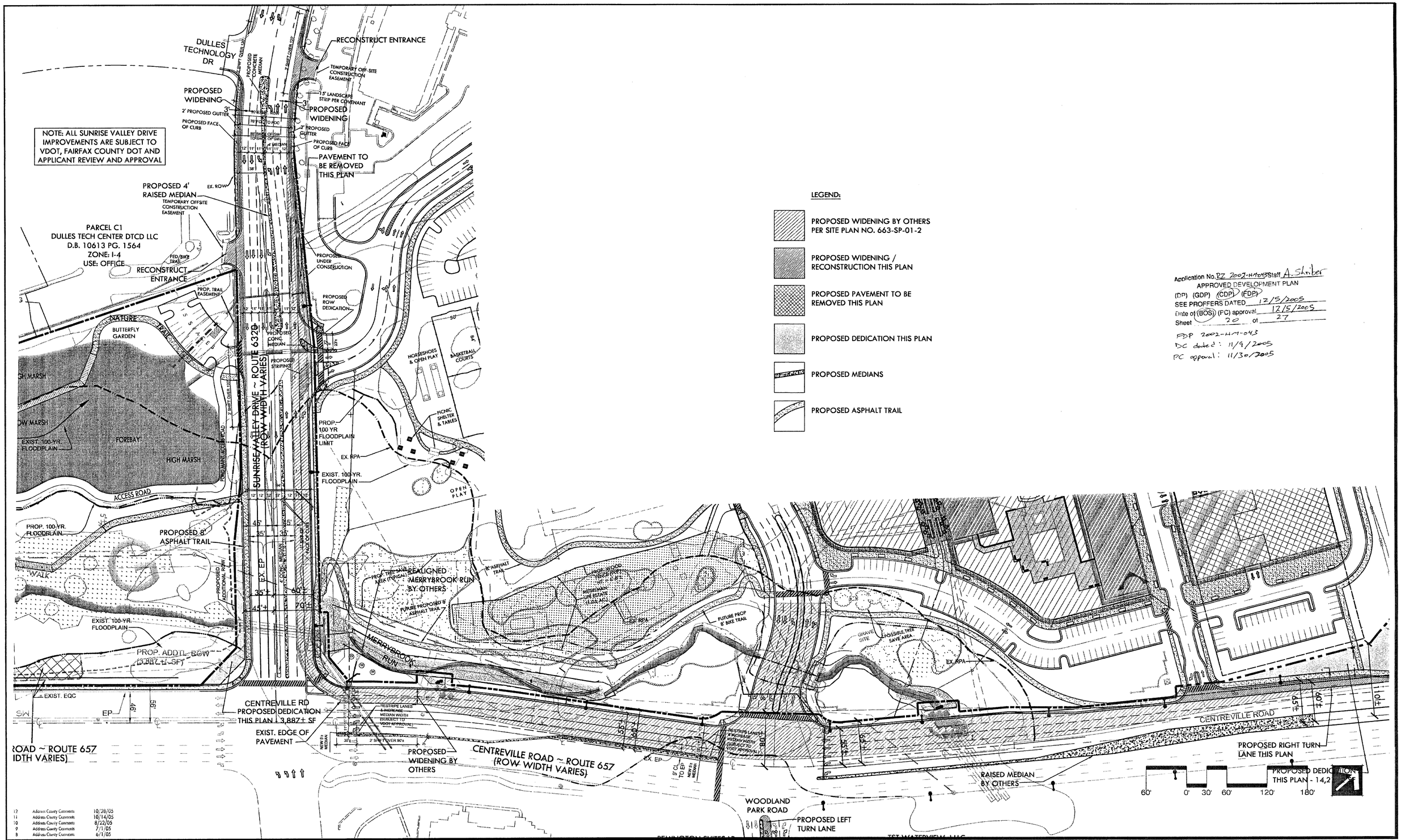


CO. PLAN #

DESIGN	SURVEY PHR+A
DRAWN REL	DATE June 3, 2002
CHECKED DHS	SCALE AS NOTED
SHEET 19 OF 27	FILE NO. 09752-2-4



Application No. RZ 2002-HM-043 Staff A. Shriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (FC) approval 12/5/2005
Sheet 20 of 27

FDP 2002-HM-043
BC dated: 11/9/2005
PC approval: 11/30/2005

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REVISION

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CDP / FDP / PCA
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FAIRFAX COUNTY, VIRGINIA

TITLE
ROAD IMPROVEMENTS EXHIBIT

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LANDBAY REFERENCE DIAGRAM
Scale 1"=800'
A B C D E-F G

CO. PLAN #

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SHEET 20 OF 27	FILE NO. 09752-2-4

ENVIRONMENTAL NARRATIVE

MERRYBROOK RUN

100-YEAR FLOODPLAIN AND SPECIAL EXCEPTION

MERRYBROOK RUN FLOWS THROUGH THE SITE IN A SOUTHERN DIRECTION, PARALLELING CENTREVILLE ROAD. THE DRAINAGE AREA FOR THIS SECTION IS APPROXIMATELY 520 ACRES AND, THEREFORE, CLASSIFIED AS A MAJOR FLOOD PLAIN. ALTHOUGH IT IS TOO SMALL TO REGISTER ON THE FEMA FLOODPLAIN MAPS, FEMA MAPS (COMMUNITY PANEL NO. 5155250050 D, MARCH 1990) INDICATE THE PROJECT TO BE WITHIN FLOODZONE X, AN AREA OUTSIDE THE 500-YEAR FLOODPLAIN.

THE FLOODPLAIN NORTH OF SUNRISE VALLEY DRIVE WILL BE PRESERVED EXECEPT FOR AN ENTRANCE CROSSING FROM CENTREVILLE ROAD, MINOR FILLING ALONG THE EDGE OF THE FLOODPLAIN AND POSSIBLE SANITARY SEWER CONNECTIONS. THE FLOODPLAIN SOUTH OF SUNRISE VALLEY DRIVE WILL BE PRESERVED AS OPEN SPACE AND ENHANCED AS A LINEAR RIVER PARK BY CREATING A STORMWATER MANAGEMENT WETLANDS FACILITY, PEDESTRIAN TRAILS, RAISED BOARDWALKS, AND A VIEWING GAZEBO. A FLOODPLAIN STUDY (1540-FP-01) WAS APPROVED ON MARCH 25, 2003. A SPECIAL EXCEPTION (SE 2002-HM-046) IS SUBMITTED CONCURRENTLY WITH THIS APPLICATION FOR THE COMPREHENSIVE EVALUATION OF THE EFFECTS OF FILLING IN THE FLOODPLAIN FOR THE POND, AS WELL AS THE PROPOSED ENTRANCE CROSSING FROM CENTREVILLE ROAD.

WETLANDS

A DETAILED WETLAND SURVEY WAS PERFORMED BY WETLAND STUDIES AND SOLUTIONS, INC. (WSSI) IN 2001. MERRYBROOK RUN IS A PERENNIAL STREAM, CLASSIFIED AS WATERS OF THE U.S. ADJACENT AND CONTIGUOUS WETLAND AREAS ARE PRESENT AS SHOWN ON THE PLAN AND ARE RESOURCE PROTECTION AREA (RPA) COMPONENTS. THE U.S. ARMY CORPS OF ENGINEERS ARE IN AGREEMENT WITH WSSI'S FINDINGS AND GRANTED A JURSIDICTIONAL DETERMINATION (01-N0085) ON AUGUST 13, 2001. WETLAND PERMITS FOR THE CONSTRUCTION OF THE STORMWATER WETLAND FACILITY HAVE BEEN APPROVED UNDER AN INDIVIDUAL DEQ VIRGINIA WATER PROTECTION PERMIT NO. VWP 03-0244 EXPIRING JUNE 10, 2018 AND A CORPS OF ENGINEERS STATE PROGRAM GENERAL PERMIT NO. SPGP 03-V0244 EXPIRING JUNE 26, 2018. THE CENTREVILLE ROAD ENTRANCE THAT CROSSES MERRYBROOK RUN HAS BEEN PERMITTED UNDER ABBREVIATED STANDARD PERMIT ASP18 EXPIRING AUGUST 24, 2004, AND VA. DEQ WAIVER #01-0046 DATED 6/1/01. APPROXIMATELY 0.70 ACRES OF PERMANENT WETLAND IMPACTS WILL OCCUR WITH THIS APPLICATION. WETLAND MITIGATION WILL OCCUR ON-SITE IN A WETLAND-STORMWATER MANAGEMENT POND DESCRIBED BELOW. APPROXIMATELY 2.3 ACRES OF WETLANDS AND APPROXIMATELY 1,350 LINEAR FEET OF PERENNIAL STREAM AND APPROXIMATELY 450 LINEAR FEET OF INTERMITENT STREAM WILL BE PRESERVED WITH A 9.5+/- RIPARIAN BUFFER EASEMENT.

RESOURCE PROTECTION AREA (RPA)

A RPA HAS BEEN ESTABLISHED FOR THIS APPLICATION BY AN RPA PLAN (3717-RPA-02, APPROVED OCTOBER 2, 2001) PREPARED BY WSSI. A WATER QUALITY IMPACT ASSESSMENT (WQIA) AND AN RPA EXCEPTION (1504-WQ-01-1, MAY 13, 2004) WAS PREVIOUSLY APPROVED FOR THE PROPOSED WETLAND - STORMWATER MANAGEMENT POND, TRAILS AND BOARDWALKS, AND THE PROPOSED ENTRANCE CROSSING FROM CENTREVILLE ROAD THAT ARE WITHIN THE RPA. AN AMENDED WQIA AND RPAE IS BEING FILED CONCURRENTLY WITH THIS APPLICATION TO CLARIFY THE PROPOSED GRADING IMPACTS AND RESTORATION OF WETLANDS WITHIN THE RPA.

ENVIRONMENTAL QUALITY COORIDOR (EQC)

THE LIMITS OF THE EQC ARE GENERALLY CONTAINED WITHIN, OR EQUAL TO, THE RPA AND/OR THE 100-YEAR FLOODPLAIN SINCE THE EXISTING SLOPES ADJACENT ARE LESS THAN 15%. THE CENTREVILLE ROADWAY EMBANKMENT SOUTH OF SUNRISE VALLEY DRIVE IS THE ONLY EXCEPTION TO THIS. THE PROPOSED SWM/BMP WETLAND FACILITY PROPOSED PARTIALLY WITHIN THE EQC WILL PROVIDE A REGIONAL BENEFIT BY REPLACING DEGRADED PORTIONS OF THE EQC AND EXPANDING THE EFFECTIVE AREA BY THE CREATION OF A MOSAIC OF WETLAND HABITAT WHERE NONE CURRENTLY EXISTS, LARGELY IN AREAS OUTSIDE OF AND ADJACENT TO THE EQC; ENHANCING THE INTENDED FUNCTION OF THE EQC BY THE CREATION OF A MICRO-POOL AND SEDIMENT FOREBAY THAT FACILITATES REMOVAL OF SEDIMENTS FROM STORMWATER RUNOFF; EXCEEDING THE BMP REQUIREMENT FOR PHOSPHOROUS REMOVAL FOR THE SITE BY 12.5 TO 20%.; TREATING APPROXIMATELY 7.4 ACRES OF OFFSITE AREAS WITHIN THE DULLES AIRPORT ACCESS ROAD RIGHT-OF-WAY, THE SUNRISE VALLEY DRIVE RIGHT-OF-WAY AND AN EXISTING SITE TO THE WEST (SEE SWM MAPS AND NARRATIVE SHEET); AND PROVIDING PASSIVE AND EDUCATIONAL OPPORTUNITIES FOR THE COMMUNITY THROUGH THE CREATION OF TRAILS AND BOARDWALKS WITHIN THE WETLAND HABITAT.

EXISTING CONSERVATION EASEMENT VACATION

ROAD IMPROVEMENTS ASSOCIATED WITH THE DULLES STATION PROJECT HAVE BEEN APPROVED (SITE PLAN NO. 663-SP-01-2) FOR THE WIDENING OF THE CENTREVILLE ROAD BY OTHERS, INCLUDING CONSTRUCTION OF APPROXIMATELY 200 FEET OF THE SITE'S MAIN CENTREVILLE ROAD ENTRANCE WHICH CROSSES THE FLOODPLAIN. IN LIEU OF REQUIRING A SPECIAL EXCEPTION FOR FILLING IN THE FLOODPLAIN AND TO OFFSET IMPACTS TO THE RPA FOR THE WIDE ENTRANCE CROSSING, THE COUNTY ALLOWED THE DEVELOPER TO CREATE A CONSERVATION EASEMENT ALONG THE STREAM NORTH OF THIS CROSSING. THIS APPLICATION PROPOSES TO EXTINGISH THIS CONSERVATION EASEMENT SINCE A FLOODPLAIN STUDY AND RPA EXCEPTION HAVE BEEN APPROVED FOR THE PROPOSED ENTRANCE AND AN EVALUATION IS TAKING PLACE UNDER THE SPECIAL EXCEPTION FILED WITH THIS APPLICATION.

STORMWATER MANAGEMENT / BMP

SEE SHEETS FOLLOWING FOR SWM, BMP AND OUTFALL ANALYSES AND NARRATIVES.

EXISTING VEGETATION

THE SITE IS PRIMARILY OPEN GRASSLAND USED FOR AGRICULTURE-PASTURE WITH THE EXCEPTION OF THE MERRYBROOK RUN FLOODPLAIN, CLASSIFIED AS BOTTOMLAND UPLAND FOREST AND WETLANDS. AN EXISTING VEGETATION MAP (EVM) HAS BEEN SUBMITTED WITH THIS APPLICATION, WHICH SHOWS THE EXISTING COVER TYPES FOR THIS PROJECT. THERE ARE SOME EXISTING TREE SPECIMENTS LOCATED IN THE VICINITY OF THE EXISTING RESIDENCE WITHIN THE RPA THAT ARE WORTHY OF PRESERVATION FOR THIS PROJECT. A TREE PRESERVATION PLAN WILL BE PREPARED DURING THE FINAL ENGINEERING AND COORDINATED WITH THE COUNY'S URBAN FORESTER TO MINIMIZE THE DISTURBANCE TO THE EXISTING, HIGH QUALITY VEGETATION IN THE UNDISTURBED OPEN SPACE AREAS.

LIGHTING

FULL CUT-OFF LIGHTING FIXTURES SHALL BE USED WITH DIRECTIONALLY SHEILDED LIGHTING, WHERE APPROPRIATE, TO PROTECT PEDESTRIANS AND MOTORISTS FROM GLARE. PARKING LOT LIGHTING AND TOP LEVELS OF PARKING STRUCTURES WILL BE REDUCED BY 50% OF FULL OPERATIONAL LEVELS WITHIN 30 MINUTES AFTER CLOSE OF BUSINESS. ALL PLAYING FIELD AND COURT LIGHTING WILL BE FULL CUT-OFF AND DIRECTIONALLY SHIELDED TO MINIMIZE GLARE AND LIGHT TRESPASS ONTO ADJACENT PROPERTY.

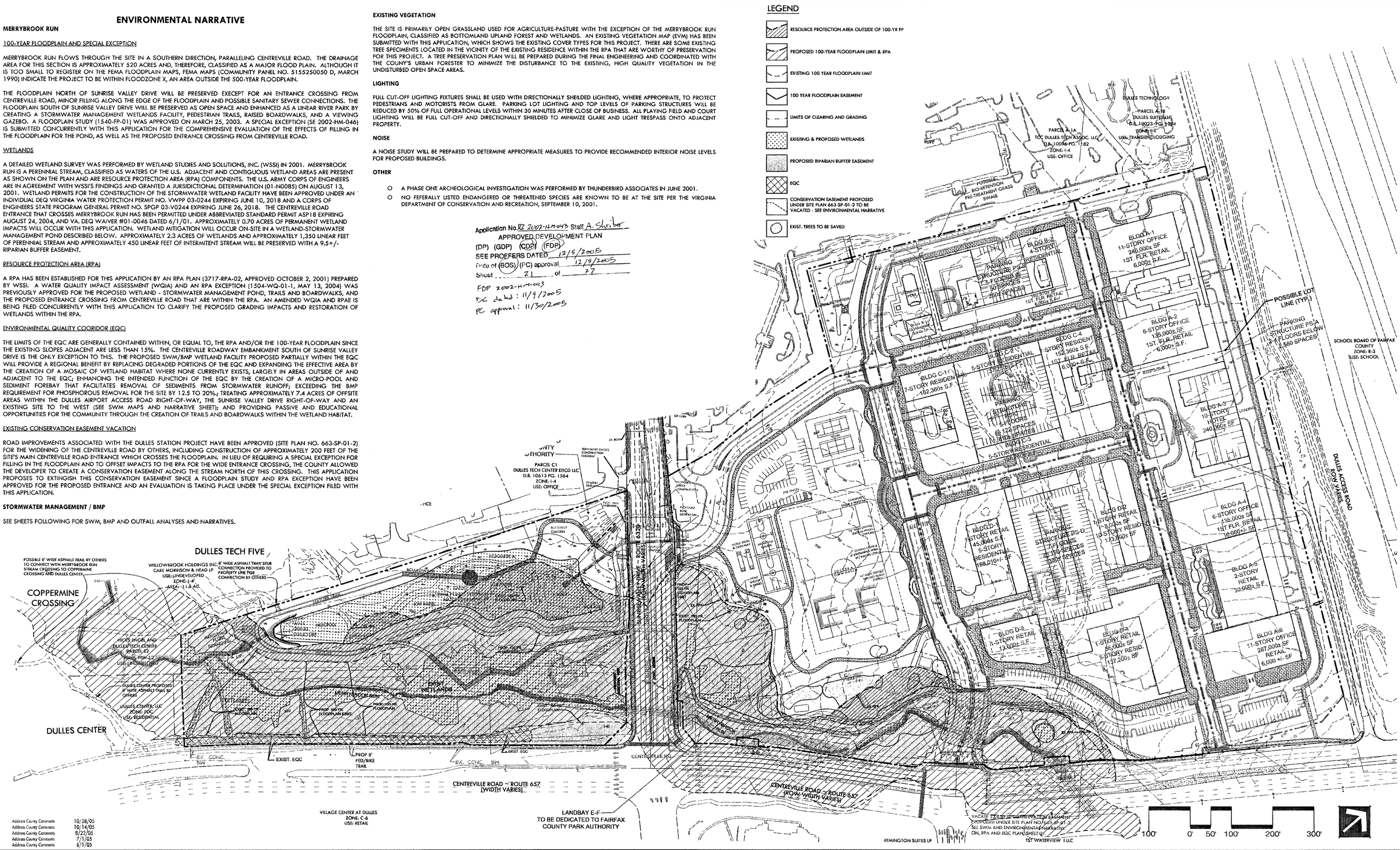
NOISE

A NOISE STUDY WILL BE PREPARED TO DETERMINE APPROPRIATE MEASURES TO PROVIDE RECOMMENDED INTERIOR NOISE LEVELS FOR PROPOSED BUILDINGS.

OTHER

- A PHASE ONE ARCHEOLOGICAL INVESTIGATION WAS PERFORMED BY THUNDERBIRD ASSOCIATES IN JUNE 2001.
- NO FEFERALLY LISTED ENDANGERED OR THREATENED SPECIES ARE KNOWN TO BE AT THE SITE PER THE VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION, SEPTEMBER 10, 2001.

Application No. RZ 2002-HM-043 Staff A. Shirbar
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS)/(PC) approval 12/5/2005
Sheet 21 of 27
FDP 2002-HM-043
DC dated: 11/9/2005
PC approval: 11/30/2005



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DAVID H. STEIGLER No. 609
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PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
RPA, EQC & ENVIRONMENTAL PLAN

DAVIS ■ CARTER ■ SCOTT
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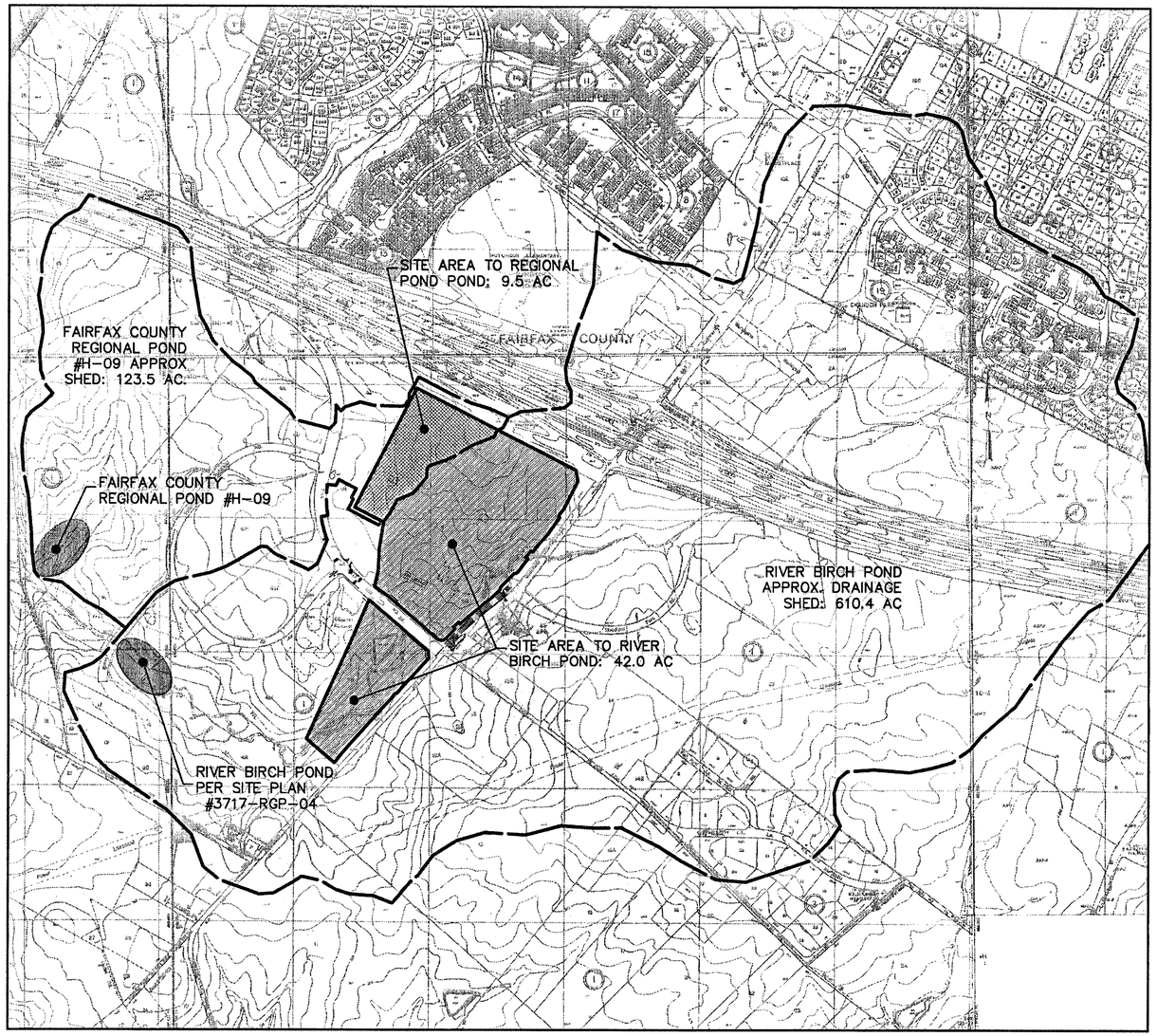
LANDBAY REFERENCE DIAGRAM Scale 1"=800'
B C A G E-F D

CO. PLAN #

DESIGN	SURVEY PHR+A
DRAWN REL	DATE June 3, 2002
CHECKED DHS	SCALE AS NOTED
SHEET 21 OF 27	FILE NO. 09752-2-4

PRE–DEVELOPMENT DRAINAGE SHED



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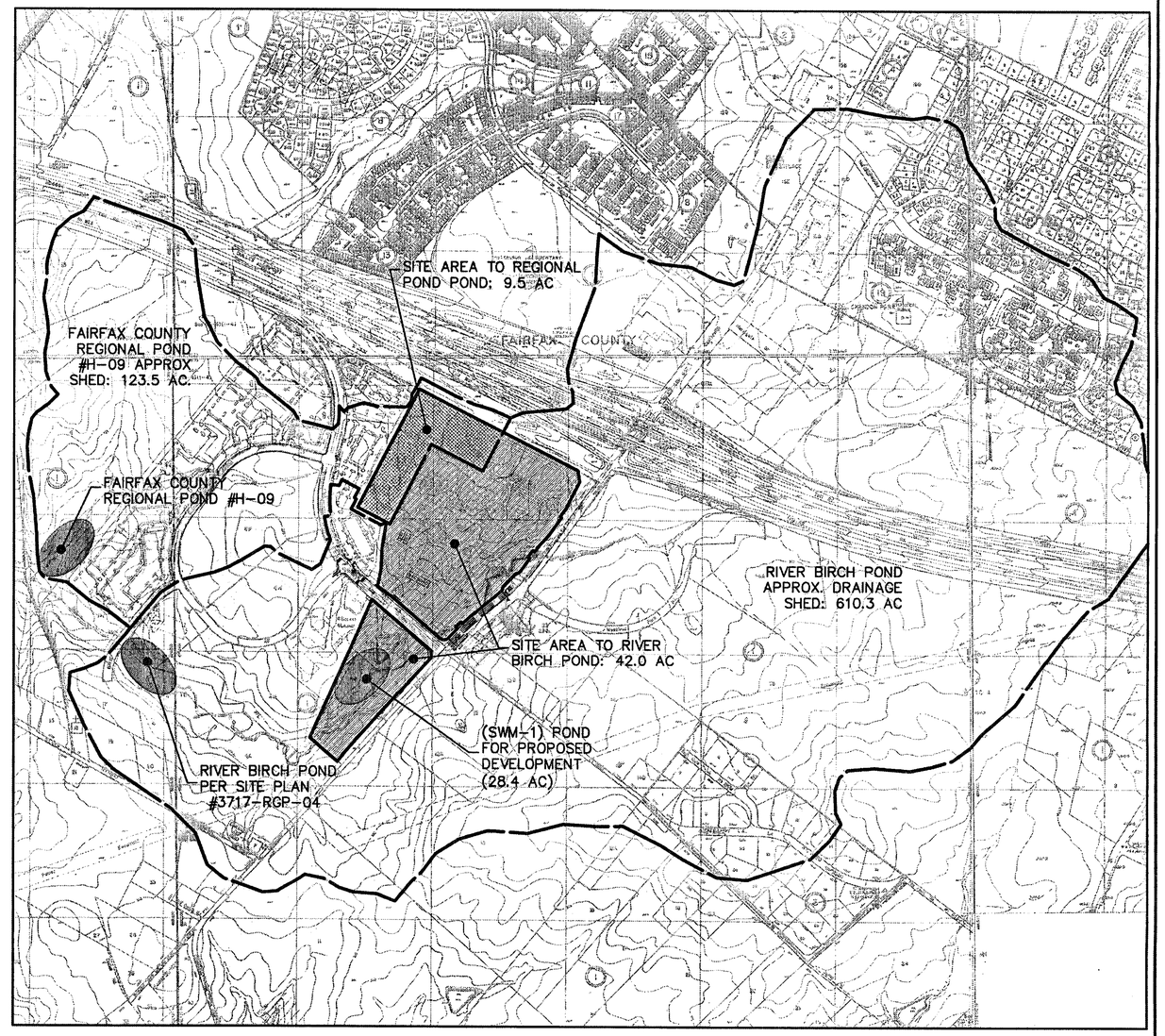
POST–DEVELOPMENT DRAINAGE SHED



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Application No. RZ 2002-HM-043 Staff A. Shriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (FC) approval 12/5/2005
Sheet 22 of 27

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HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
DRAINAGE SHED MAPS

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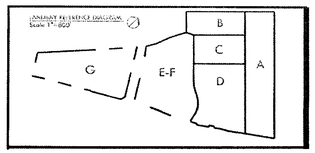
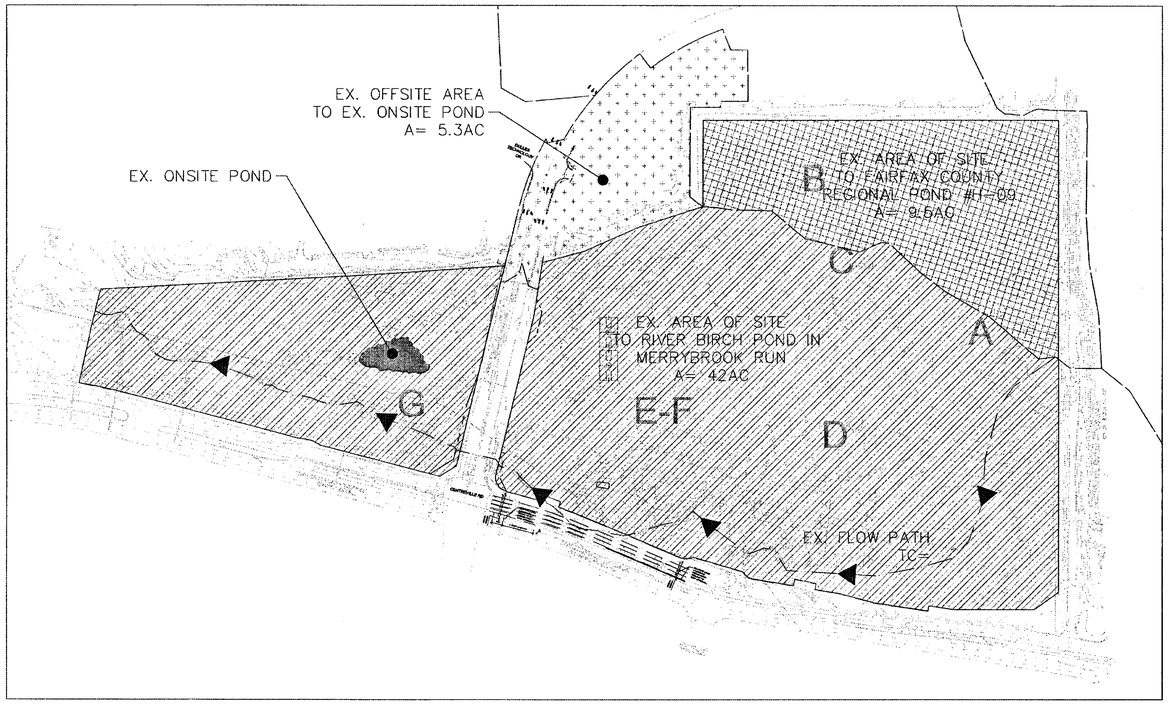


CO. PLAN #

DESIGN: MBR	SURVEY: PHR+A
DRAWN: MBR	DATE: APRIL, 2005
CHECKED: HAC	SCALE: AS NOTED
SHEET: 22 OF 27	FILE NO.: 09752-2-4

PRE-DEVELOPMENT CONDITIONS



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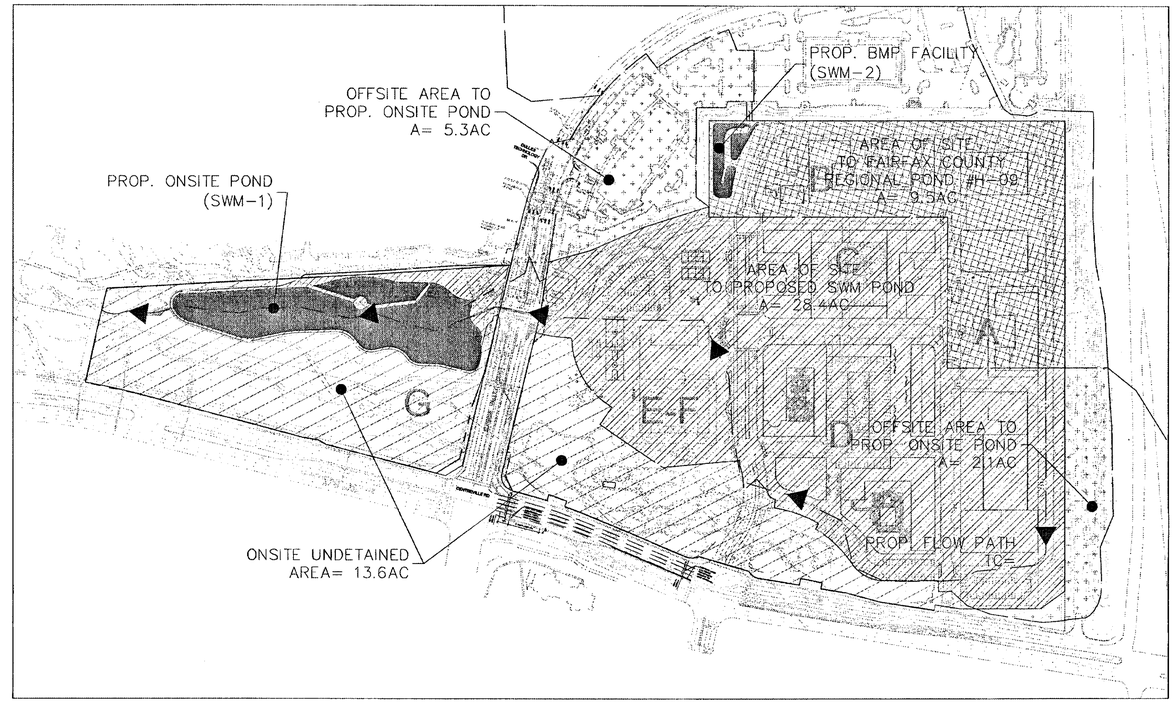
POST-DEVELOPMENT CONDITIONS



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STORMWATER MANAGEMENT NARRATIVE

STORMWATER MANAGEMENT REQUIREMENTS WILL BE MET WITH A PROPOSED WETLAND POND FACILITY (SWM-1) LOCATED ON LANDBAY G, AS WELL AS A FAIRFAX COUNTY MAINTAINED OFF-SITE REGIONAL DRY POND (#H-09). A PRELIMINARY DESIGN FOR THE ON-SITE POND IS SHOWN ON SHEET 20 AND INCLUDES GRADING FOR THE EMBANKMENT AND WETLANDS, A MAINTENANCE ACCESS (GRAVEL OR NATURAL SURFACE), OUTFALL PIPES, AND LANDSCAPE AMENITIES SUCH AS NATIVE WETLAND PLANTINGS, BOARDWALKS, A GAZEBO, AND TRAILS. PRELIMINARY STORMWATER MANAGEMENT COMPUTATIONS HAVE BEEN PERFORMED AND DETERMINED THAT APPROXIMATELY 86,000 CUBIC FEET OF STORAGE IS NEEDED FOR BMP IN THE POND (SEE BMP COMPUTATION SHEET 28). FOR THE POND APPROXIMATELY 192,000 CUBIC FEET OF STORAGE IS NEEDED TO DETAIN THE TEN-YEAR STORM EVENT.

THE OUTLET CONTROL STRUCTURE IS DESIGNED TO SERVE AS THE EMERGENCY SPILLWAY FOR THE POND. SINCE THE PROPOSED POND EMBANKMENT IS ADJACENT TO THE FLOODPLAIN, FINAL ENGINEERING WILL VERIFY THAT NO DOWNSTREAM PROPERTY DAMAGE WILL OCCUR TO EXISTING STRUCTURES. THE POND IS DESIGNED TO PROVIDE DETENTION FOR APPROXIMATELY 28.4 ACRES, AS WELL AS TWO ADDITIONAL OFFSITE AFES. 2.1 AC FROM THE NORTHEAST THAT CURRENTLY DRAINS DIRECTLY TO MERRYBROOK RUN, AND 5.3 AC FROM A DEVELOPED SITE TO THE WEST THAT DRAINS TO AN EXISTING POND THAT IS BEING REPLACED BY THIS APPLICATION. APPROXIMATELY 9.5 ACRES OF THE DEVELOPED PORTION OF THE SITE DRAINS THROUGH THE WESTERN DEVELOPED OFFSITE AREA TO A FAIRFAX COUNTY REGIONAL POND #H-09.

THE TOTAL DRAINAGE AREA SERVED BY THE PROPOSED ONSITE POND IS APPROXIMATELY 35.8 ACRES. STORMWATER WILL BE CONVEYED TO THE POND IN A PROPOSED UNDERGROUND STORM SEWER SYSTEM INCLUDING A CROSSING (SHOWN ON THE PLAN) UNDER SUNRISE VALLEY DRIVE. OVERLAND RELIEF WILL BE PROVIDED THROUGH THE PROPOSED PROJECT IN ACCORDANCE WITH CURRENT COUNTY CRITERIA TO PRECLUDE FLOODING POTENTIAL.

STORMWATER OUTFALL

THE STORMWATER OUTFALL FROM THE PROPOSED POND IS DIRECTLY INTO THE MERRYBROOK RUN FLOODPLAIN AS SHOWN ON THE PLANS. (SEE FAIRFAX COUNTY PLAN #1504-FP-01-1) THE FLOW RATES OF THE PROPOSED TWO AND TEN YEAR STORM EVENT RELEASES WILL BE AT OR LESS THAN THE EXISTING FLOWRATE AT THE OUTFALL POINT OF THE POND. VELOCITIES WILL BE DISSIPATED, IN ACCORDANCE WITH CURRENT COUNTY CRITERIA, BEFORE REACHING THE EXISTING BED AND BANKS OF THE CHANNEL.

APPROXIMATELY 9.5 ACRES OF THE NORTHWESTERN PORTION OF THE SITE DRAINS OFFSITE IN A WESTERLY DIRECTION. THE ADJACENT WESTERLY PROPERTIES WERE DEVELOPED AND DO PROVIDE THE NECESSARY CAPACITY TO CONVEY THE STORMWATER RUNOFF GENERATED FROM THE ULTIMATE BUILD OUT PROPOSED ON THIS APPLICATION. THE 9.50 ACRES OF THIS SITE EVENTUALLY OUTFALLS AT A FAIRFAX COUNTY REGIONAL POND #H-9. A DETAILED OUTFALL ANALYSIS IS SHOWN ON SHEETS 29,30.

THERE ARE APPROXIMATELY 13.6 ACRES OF THE SITE THAT WILL BE TOO LOW IN ELEVATION TO DRAIN TO THE POND.(SWM-1) THESE AREAS ARE LARGELY UNDISTURBED EXCEPT FOR SOME TRAILS AND LANDSCAPING AMENITIES. CONSEQUENTLY, CONCENTRATED AND NON-CONCENTRATED FLOWS FROM THESE AREAS MAY DISCHARGE DIRECTLY INTO THE MERRYBROOK RUN FLOODPLAIN. PROPOSED VELOCITIES FROM THESE OUTFALLS WILL BE MITIGATED IN ACCORDANCE WITH CURRENT COUNTY CRITERIA, BEFORE REACHING THE EXISTING BED AND BANKS OF THE EXISTING CHANNEL.

IN OUR PROFESSIONAL OPINION, THE EXISTING STORMWATER OUTFALLS AND DOWNSTREAM SYSTEMS MENTIONED ABOVE SHOULD BE PROVEN TO BE ADEQUATE AS REQUIRED BY THE CURRENT COUNTY CRITERIA DURING THE FINAL ENGINEERING PHASE OF THIS PROJECT.

STORMWATER MANAGEMENT PROPOSED POND

PRELIMINARY SUMMARY TABLE

TOTAL SHED AREA	= 42	AC	
CONTROLLED AREA	= 28.4	AC	
UNCONTROLLED AREA	= 13.6	AC	
OFFSITE CONTROLLED AREA	= 7.4	AC	
PRE-DEVELOPED FLOW	= 57.7	CFS	*10-YR STORM
POST-DEVELOPED FLOW	= 53.8	CFS	*10-YR STORM
VOLUME OF DETAINED WATER	= 191,000	CF	*10-YR STORM

Application No. RZ 2002-HM-013 Staff A. Strider
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
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Sheet 23 of 27
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LANDBAY REFERENCE DIAGRAM
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CO. PLAN #

DESIGN	SURVEY PHR+A
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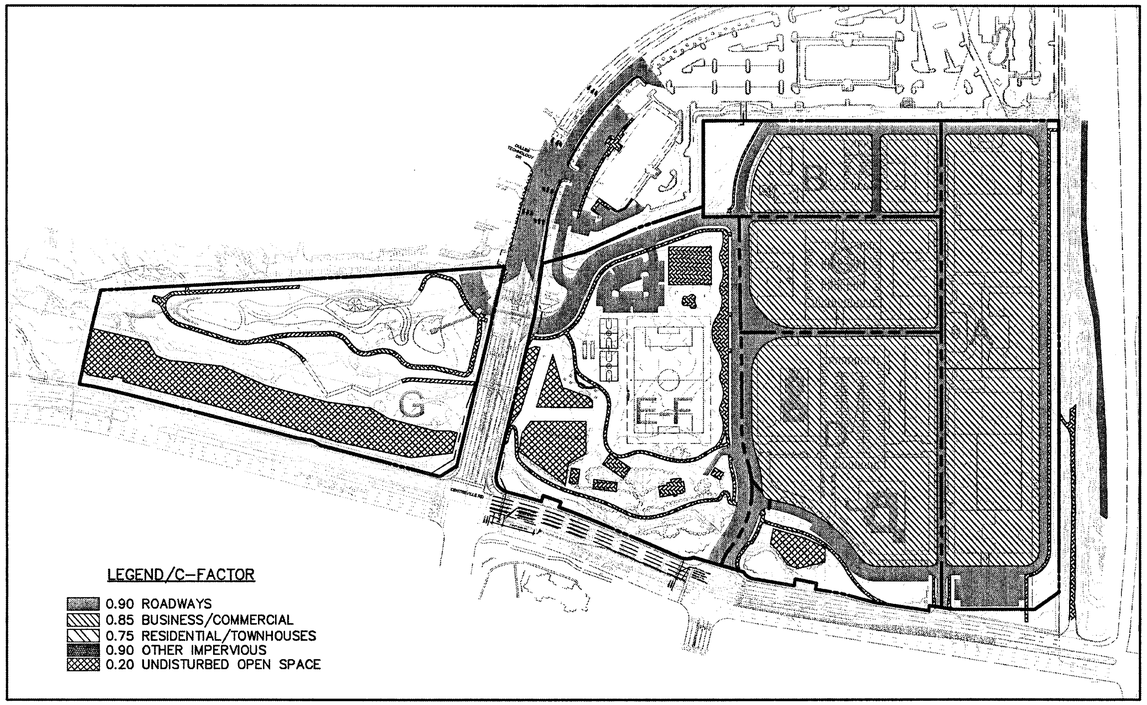
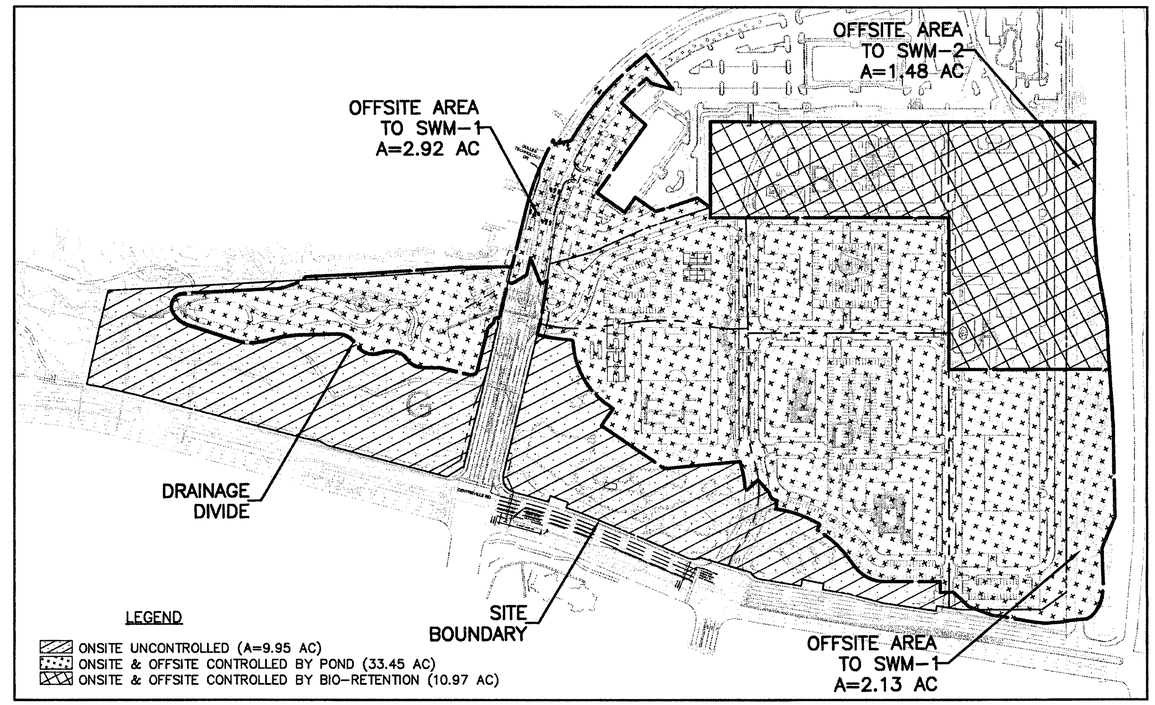
SHEET 23 OF 27	FILE NO. 09752-2-4

BMP AREA MAP



SCALE: 1"=200'

BMP DRAINAGE MAP



SCALE: 1"=200'

BMP AREA DESIGNATION

LAND BAY A

Area Description	C-factor	Areas (sf)	Areas (ac)
Onsite Controlled by Pond	0.79	220,155	5.05
Roadway	0.90	43,854	1.01
Business/Commercial	0.85	145,982	3.35
Residential/Townhouse	0.75		0.00
Other Impervious	0.90	335	0.01
Undisturbed Open Space	0.20		0.00
Grass Areas	0.30	29,984	0.69
Onsite Controlled by Bio-Retention	0.81	231,940	5.32
Roadway	0.90	31,957	0.73
Business/Commercial	0.85	174,137	4.00
Residential/Townhouse	0.75		0.00
Other Impervious	0.90	5,623	0.13
Undisturbed Open Space	0.20		0.00
Grass Areas	0.30	20,223	0.46
Onsite Uncontrolled	0.63	1,865	0.04
Roadway	0.90	724	0.02
Business/Commercial	0.85		0.00
Residential/Townhouse	0.75		0.00
Other Impervious	0.90	294	0.01
Undisturbed Open Space	0.20		0.00
Grass Areas	0.30	847	0.02
Land Bay Area	0.80	453,960	10.42

LAND BAY B

Area Description	C-factor	Areas (sf)	Areas (ac)
Onsite Controlled by Pond	0.00		0.00
Roadway	0.90		0.00
Business/Commercial	0.85		0.00
Residential/Townhouse	0.75		0.00
Other Impervious	0.90		0.00
Undisturbed Open Space	0.20		0.00
Grass Areas	0.30		0.00
Onsite Controlled by Bio-Retention	0.74	181,523	4.17
Roadway	0.90	35720	0.82
Business/Commercial	0.85	105665	2.43
Residential/Townhouse	0.75		0.00
Other Impervious	0.90	1767	0.04
Undisturbed Open Space	0.20		0.00
Grass Areas	0.30	38,371	0.88
Onsite Uncontrolled	0.00		0.00
Roadway	0.90		0.00
Business/Commercial	0.85		0.00
Residential/Townhouse	0.75		0.00
Other Impervious	0.90		0.00
Undisturbed Open Space	0.20		0.00
Grass Areas	0.30		0.00
Land Bay Area	0.74	181,523	4.17

LAND BAY C

Area Description	C-factor	Areas (sf)	Areas (ac)
Onsite Controlled by Pond	0.86	185,592	4.26
Roadway	0.90	28,967	0.66
Business/Commercial	0.85	156,625	3.60
Residential/Townhouse	0.75		0.00
Other Impervious	0.90		0.00
Undisturbed Open Space	0.20		0.00
Grass Areas	0.30		0.00
Onsite Uncontrolled	0.00	0	0.00
Roadway	0.90		0.00
Business/Commercial	0.85		0.00
Residential/Townhouse	0.75		0.00
Other Impervious	0.90		0.00
Undisturbed Open Space	0.20		0.00
Grass Areas	0.30		0.00
Land Bay Area	0.86	185,592	4.26

LAND BAY D

Area Description	C-factor	Areas (sf)	Areas (ac)
Onsite Controlled by Pond	0.86	340,121	7.81
Roadway	0.90	49,927	1.15
Business/Commercial	0.85	289,434	6.64
Residential/Townhouse	0.75		0.00
Other Impervious	0.90	270	0.01
Undisturbed Open Space	0.20		0.00
Grass Areas	0.30	490	0.01
Onsite Uncontrolled	0.41	73,389	1.68
Roadway	0.90	9,297	0.21
Business/Commercial	0.85		0.00
Residential/Townhouse	0.75		0.00
Other Impervious	0.90	5,430	0.12
Undisturbed Open Space	0.20	10,448	0.24
Grass Areas	0.30	48,214	1.11
Land Bay Area	0.78	413,510	9.49

LAND BAY E & F

Area Description	C-factor	Areas (sf)	Areas (ac)
Onsite Controlled by Pond	0.51	321,021	7.37
Roadway	0.90	74,720	1.72
Business/Commercial	0.85		0.00
Residential/Townhouse	0.75		0.00
Other Impervious	0.90	38,315	0.88
Undisturbed Open Space	0.20		0.00
Grass Areas	0.30	207,986	4.77
Onsite Uncontrolled	0.00	207,966	4.77
Roadway	0.90	504	0.01
Business/Commercial	0.85		0.00
Residential/Townhouse	0.75		0.00
Other Impervious	0.90	27,568	0.63
Undisturbed Open Space	0.20	38,880	0.89
Grass Areas	0.30	141,014	3.24
Land Bay Area	0.31	528,987	12.14

LAND BAY G

Area Description	C-factor	Areas (sf)	Areas (ac)
Onsite Controlled by Pond	0.36	170,003	3.90
Roadway	0.90	6,871	0.16
Business/Commercial	0.85		0.00
Residential/Townhouse	0.75		0.00
Other Impervious	0.90	11,129	0.26
Undisturbed Open Space	0.20		0.00
Grass Areas	0.30	152,003	3.49
Onsite Uncontrolled	0.29	309,069	7.10
Roadway	0.90		0.00
Business/Commercial	0.85		0.00
Residential/Townhouse	0.75		0.00
Other Impervious	0.90	11,229	0.26
Undisturbed Open Space	0.20	109,416	2.51
Grass Areas	0.30	188,424	4.33
Land Bay Area	0.31	479,072	11.00

OFFSITE TO POND

Area Description	C-factor	Areas (sf)	Areas (ac)
Roadway	0.90	78,799	1.81
Business/Commercial	0.85		0.00
Residential/Townhouse	0.75		0.00
Other Impervious	0.90	16,035	0.37
Undisturbed Open Space	0.20		0.00
Grass Areas	0.30	124,937	2.87
Offsite Controlled	0.56	219,771	5.05

OFFSITE TO BIO-RETENTION AREA

Area Description	C-factor	Areas (sf)	Areas (ac)
Roadway	0.90	11,194	0.26
Business/Commercial	0.85		0.00
Residential/Townhouse	0.75		0.00
Other Impervious	0.90		0.00
Undisturbed Open Space	0.20		0.00
Grass Areas	0.30	53,282	1.22
Offsite Controlled	0.40	64,476	1.48

TOTAL SITE

Area Description	C-factor	Areas (sf)	Areas (ac)
Onsite Controlled by Pond	0.69	1,236,892	28.40
Onsite Controlled by Bio-Retention	0.78	413,463	9.49
Onsite Uncontrolled	0.38	433,545	9.95
Undisturbed Open (Onsite) Uncontrolled	0.20	158,744	3.64
Offsite Controled to Pond	0.56	219,771	5.05
Offsite Controled to Bio-Retention	0.40	64,476	1.48
Total Site	0.61	2,242,644	51.48

Application No. RZ 2002-HM-043 Staff A. Shriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 24 of 27
FDP 2002-HM-043
DC dated: 11/9/2005
PC approval: 11/30/2005

NO.	DESCRIPTION	DATE	REV'D	REV'W'D	APRV'D	DATE
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3	Revised Submission-1.83M SF	4/13/04				
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1	Initial Submission-2.56M SF	11/22/02				

REVISION

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
No. 639
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
BMP
COMPUTATIONS/ MAPS

DAVIS ■ CARTER ■ SCOTT
ARCHITECTURE AND INTERIOR ARCHITECTURE
Davis, Carter, Scott Ltd
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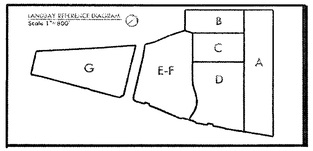
805 Fifteenth Street, N.W., Suite 1100, Washington, D.C. 20005 ■ 202.682.2300

Patton Harris Rust & Associates, pc
Engineers. Surveyors. Planners. Landscape Architects.
PHR+A
14532 Lee Road
Chantilly, VA 20151-1679
T 703.449.6700
F 703.449.6714

LANDUSE SITE/REL/CT DIAGRAM
Scale 1"= 800'



CO PLAN #

DESIGN	SURVEY PHR+A
DRAWN REL	DATE June 3, 2002
CHECKED DHS	SCALE AS SHOWN
SHEET 24 OF 27	FILE NO. 09752-2-4

OVERALL BMP DESIGN CALCULATIONS

I. WATER QUALITY NARRATIVE

THIS SITE IS SUBJECT TO A 40% PHOSPHORUS REMOVAL RATE REQUIREMENT. WE HAVE SHOWN THAT WE ARE EXCEEDING THIS REQUIREMENT BY APPROXIMATELY 10% AND ARE ACHIEVING A 50% PHOSPHORUS REMOVAL RATE. THIS WILL BE ACCOMPLISHED BY THE USE OF AN ENHANCED EXTENDED DETENTION FACILITY (SWM-1), AND/OR A BIO-RETENTION FACILITY OR OTHER BMP MEASURE (SWM-2) NECESSARY TO MEET WATER QUALITY REQUIREMENTS SUBJECT TO FINAL ENGINEERING.

28.4 ACRES OF THE SITE WILL BE DIRECTED TO THE ENHANCED EXTENDED DETENTION POND LOCATED ON LANDBAY G. A PRELIMINARY DESIGN FOR THIS POND IS SHOWN ON SHEET 20 AND INCLUDES GRADING FOR THE EMBANKMENT AND WETLANDS. THIS FACILITY WILL INCORPORATE A FOREBAY, MARSH WETLAND AREAS, AND MICRO-POOLS TO ACHIEVE A 50% PHOSPHORUS REMOVAL RATE.

9.5 ACRES OF THE SITE TO THE NORTH WILL BE TREATED BY SWM-2, WHICH WILL BE A BIORETENTION FACILITY, OR ANY OTHER BMP MEASURE NECESSARY TO MEET WATER QUALITY REQUIREMENTS. FACILITY LOCATED AT THE NORTH WEST CORNER OF THE SITE. THIS FACILITY WILL BE DESIGNED TO HAVE A PRE-TREATMENT GRASS SWALE. A FOREBAY WILL BE DESIGNED TO REDUCE THE FLOW RATES INTO THE BIO-RETENTION FACILITY. THE FACILITY WILL OUTFALL INTO AN EXISTING STORM DRAINAGE SYSTEM TO THE NORTH OF THE SITE. LARGER STORM EVENTS SHALL BE BYPASSED BEFORE THEY ENTER THE BIO-RETENTION AREA BY THE USE OF A DIVERSION MANHOLE OR OTHER MEANS SO TO NOT OVERLOAD THE BIO-RETENTION AREA.

IT SHOULD BE NOTED THAT THE PORTION OF THE SITE TREATED BY SWM-2 DRAINS TO FAIRFAX COUNTY REGIONAL POND #H-09, WHICH WAS DESIGNED TO PROVIDE WATER QUALITY AND QUANTITY CONTROL FOR THE DRAINAGE SHED. THE EXTENT AND NEED OF THE PROPOSED SWM-2 FACILITY WILL BE SUBJECT TO FINAL ENGINEERING EVALUATION.

FOR SUB-AREAS USED IN THE BMP COMPUTATIONS, SEE THE BMP AND DRAINAGE MAPS ON THE PREVIOUS SHEET.

II. WATERSHED INFORMATION

Part 1: LIST OF SUBAREAS AND "C" FACTORS USED

SUBAREA DESIGNATION AND DESCRIPTION		C	ACRES
A1	Onsite Controlled (SWM-1)	0.69	28.40
A2	Onsite Controlled (SWM-2)	0.78	9.49
A3	Onsite Uncontrolled	0.38	9.95
A4	Undisturbed Open (Onsite) Uncontrolled	0.20	3.64
A5	Offsite Controlled (SWM-1)	0.56	5.05
A6	Offsite Controlled (SWM-2)	0.40	1.48
	Total site area		51.484

TOTAL SITE AREA = 2,257,961 SQ. FT. OR 51.84 AC

III. PHOSPHORUS REMOVAL USE: 51.48 AC

Part 2: COMPUTE WEIGHTED AVERAGE "C" FACTOR FOR THE SITE

(A) AREA OF THE SITE: (a) 51.48 Ac

(B)

SUBAREA DESIGNATION		C	X	ACRES	=	PRODUCT
A1	Onsite Controlled (SWM-1)	0.69	X	28.395	=	19.50
A2	Onsite Controlled (SWM-2)	0.78	X	9.492	=	7.41
A3	Onsite Uncontrolled	0.38	X	9.953	=	3.74
A4	Undisturbed Open (Onsite) Uncontrolled	0.20	X	3.644	=	0.73
				51.5 TOTAL=		31.39 (b)

WEIGHTED POST DEVELOPMENT "C" FACTOR = (b)/(a)=(c) 0.61

Part 3: COMPUTE THE TOTAL PHOSPHORUS REMOVAL FOR THE SITE

SUBAREA DESIGNATION (1)	BMP TYPE (2)	REMOVAL EFF (3)	AREA RATIO (4)	"C" FACTOR RATIO (5)	PRODUCT (6)	
		%			(%) X (AREA RATIO) X (*C* FACTOR RATIO)	
A1	Onsite Controlled (SWM-1)	50	28.4 / 51.5	0.69 / 0.61	31.06	
A2	Onsite Controlled (SWM-2)	50	9.5 / 51.5	0.78 / 0.61	11.81	
A3	Onsite Uncontrolled	-	10.0 / 51.5	0.38 / 0.61	-	
A4	Undisturbed Open (Onsite) Uncontrolled	100	3.6 / 51.5	1.00 / 1.00	7.08	
A5	Offsite Controlled (SWM-1)	50	5.0 / 51.5	0.56 / 0.61	0.90	20% OF AREA
A6	Offsite Controlled (SWM-2)	50	1.5 / 51.5	0.40 / 0.61	0.19	20% OF AREA
		TOTAL SITE PHOSPHORUS REMOVAL =		(a)	51.04	

Part 4: DETERMINE COMPLIANCE WITH PHOSPHOROUS REMOVAL REQUIREMENT

(A) SELECT REQUIREMENT (a) 40.00

(B) IF LINE 3(a) 51.04 >= LINE 4(a) 40.00 THEN PHOSPHOROUS REMOVAL REQUIREMENT IS SATISFIED.
OK

Part 7: COMPUTE THE WEIGHTED AVERAGE 'C' FACTOR FOR EACH PROPOSED BMP FACILITY

(A) LIST ALL THE AREAS TO BE CONTROLLED BY THE PROPOSED BMP.

SUBAREA DESIGNATION AND DESCRIPTION		C	ACRES	PRODUCTS	
A1	Onsite Controlled (SWM-1)	0.69	28.40	19.50	
A5	Offsite Controlled (SWM-1)	0.56	5.05	2.82	
		(a)	TOTAL	33.44	ACRES
		(b)	TOTAL CA	22.32	
		(b)/(a)=(c)=	0.67		

Part 8: (A) EXTENDED DRY POND

CHART A6-40 VALUE (APPENDIX 4-3) FOR BMP STORAGE PER ACRE
[(4375 X C) - 875] = (a) 2044.81 cf/ac

*DESIGN 1 (48 hour drawdown)
LINE 7(a) 33.44 x LINE 8(a) 2044.81 = 68,379 cf ELEV.= 335.27

SWM-1

ENHANCED EXTENDED DETENTION POND DESIGN CLACULATIONS

II. WATERSHED INFORMATION

	AREA (ac.)	IMPERVIOUS AREA (ac.)
Landbay 'A'	5.05	4.37
Landbay 'B'	0.00	0.00
Landbay 'C'	4.26	4.26
Landbay 'D'	7.81	7.80
Landbay 'E-F'	7.37	2.59
Landbay 'G'	3.90	0.41
OFFSITE	5.05	2.18
SHED TOTAL =	33.44 ac.	21.61 ac.

III. WATER QUALITY VOLUME COMPUTATION

Per VA DCR "Stormwater Management Handbook" minimum standard 3.07:
For an *enhanced* extended-detention basin the treatment volume is equal to 2.0 x WQV (with 1.0 x WQV as extended detention volume and 1.0 x WQV as shallow marsh volume) for **50% phosphorous removal.**

WQV = 1/2" of rainfall multiplied by the area of impervious surface.

WQV = 1/2" x 33.18 ac. = 39,219 cf = 0.90 ac-ft

2.0 x WQV = 78,439 cf = 1.80 ac-ft

Shallow Marsh W.S. Elevation = 334.50
Extended Detention W.S. Elevation = 335.14

Application No. RZ 2002-HM-043 Staff A. Shriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (FC) approval 12/5/2005
Sheet 25 of 27

FDP 2002-HM-043
DC dated: 11/9/2005
PC approval: 11/30/2005

SWM-2

BIO-RETENTION FACILITY DESIGN CLACULATIONS

II. WATERSHED INFORMATION

	AREA (ac.)	IMPERVIOUS AREA (ac.)
Landbay 'A'	5.32	4.86
Landbay 'B'	4.17	3.29
OFFSITE	1.48	0.26
SHED TOTAL =	10.97 ac.	8.40 ac.

III. WATER QUALITY VOLUME COMPUTATION

Per VA DCR "Stormwater Management Handbook" minimum standard 3.11:
For a Bioretention Filter basin area equal to 2.5% of the impervious area for the first 0.5 inches or 4% of the impervious area for the first 1 inch of runoff from the impervious area.
50% phosphorous removal for first 0.5 in runoff and 65% phosphorus removal for first 1 inch in runoff

IMPERVIOUS AREA (AC.): 8.40 ac. X 2.5% = 0.21 ac. = 9,152 sf 50% Removal

IMPERVIOUS AREA (AC.): 8.40 ac. X 4.0% = 0.34 ac. = 14,643 sf 65% Removal

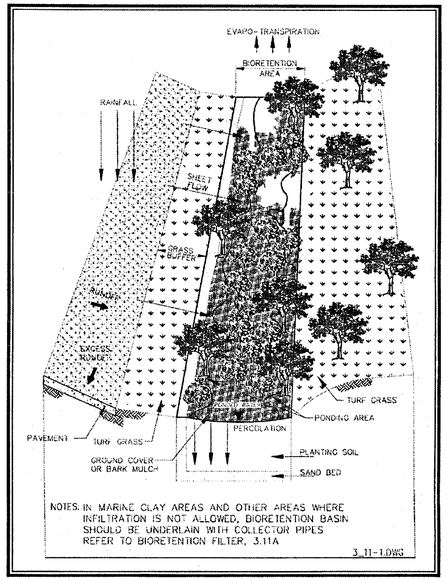
IV. SEDIMENT FOREBAY COMPUTATION

Per VA DCR "Stormwater Management Handbook" minimum standard 3.04:
For a Sediment forebay shall be sized to hold 0.25 inches of runoff pre impervious acre of contributing drainage area, with an absolute minimum of 0.1 inches per impervious acre.

DESIRED VOLUME
DRAINAGE AREA (AC.): 10.97 ac. X 0.25 in =X 3630 = 9,957 cf

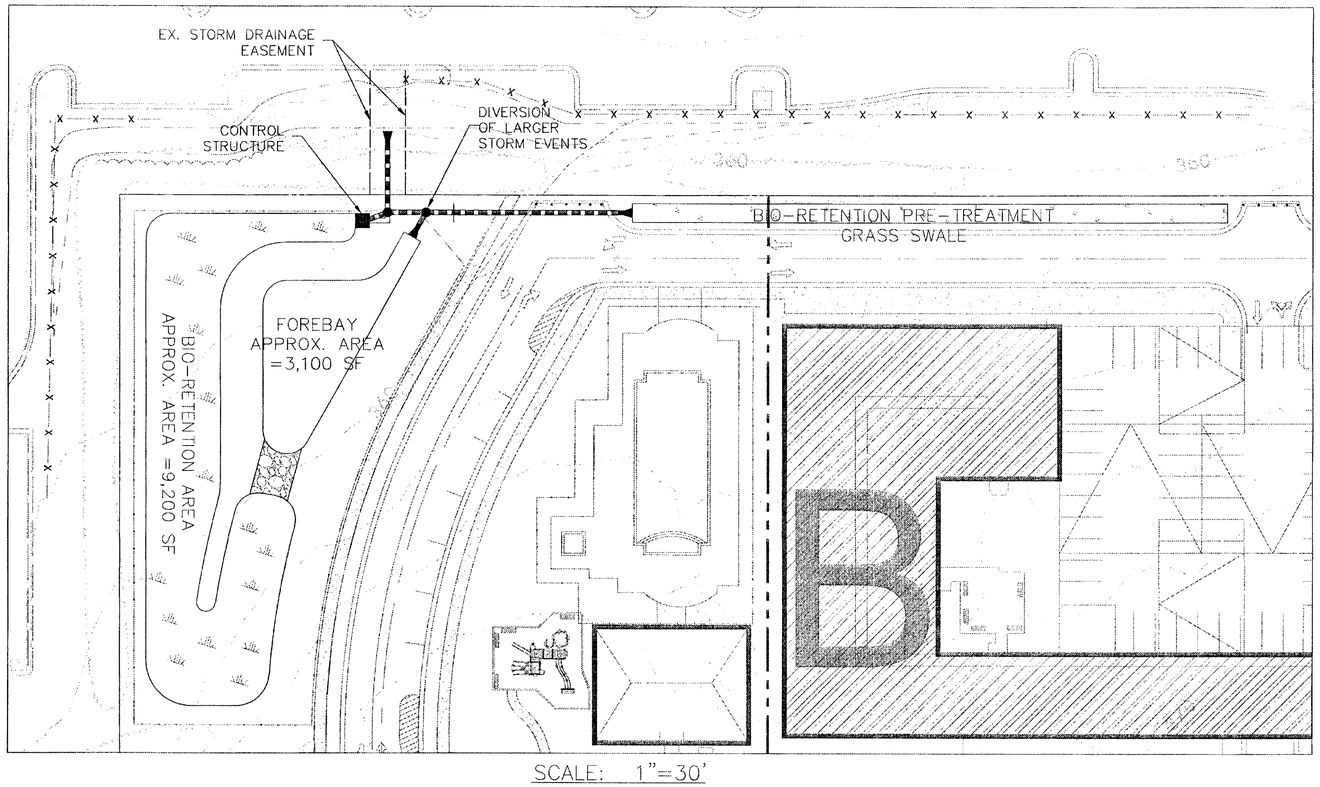
MINIMUM REQUIRED VOLUME
IMPERVIOUS AREA (AC.): 8.40 ac. X 0.10 in =X 3630 = 3,051 cf

FIGURE 3.11 - 1
Bioretention Basin



SWM-2

BIO-RETENTION LAYOUT



SCALE: 1"=30'

NO.	DESCRIPTION	DATE	REVS'D	REVW'D	APRV'D	DATE
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3	Revised Submission-1.83M SF	4/13/04				
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REVISION

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
No. 609
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
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FAIRFAX COUNTY, VIRGINIA

TITLE
BMP COMPUTATIONS

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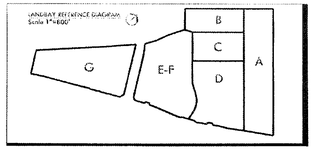
ARCHITECTURE AND INTERIOR ARCHITECTURE
Davis, Carter, Scott Ltd
1676 International Drive, Suite 500, McLean, Virginia 22102 ■ 703.556.9275
805 Fifteenth Street, N.W., Suite 1100, Washington, D.C. 20005 ■ 202.682.2300

Patton Harris Rust & Associates, pc
Engineers. Surveyors. Planners. Landscape Architects.
PHR+A
14532 Lee Road
Chantilly, VA 20151-1679
T 703.449.6700
F 703.449.6714

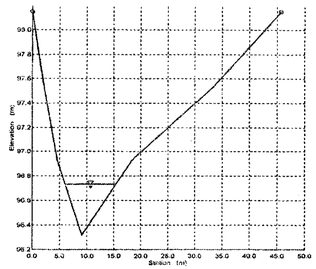
LANDBAY REFERENCE DIAGRAM
Scale 1"=1000'



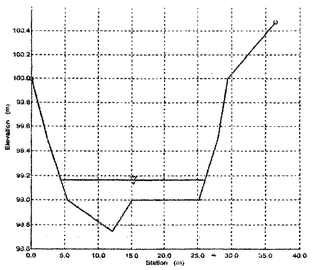
CO. PLAN #

DESIGN	SURVEY PHR+A
DRAWN REL	DATE June 3, 2002
CHECKED DHS	SCALE AS SHOWN
SHEET 25 OF 27	FILE NO. 09752-2-4

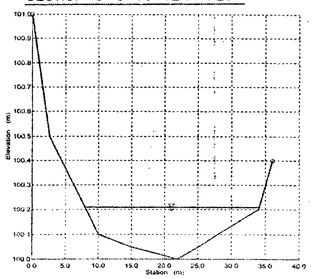
SECTION 1-1 100 YEAR FLOW



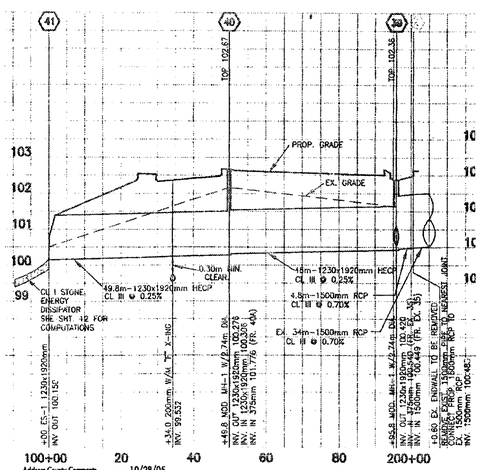
SECTION 2-2 100 YEAR FLOW



SECTION 3-3 10 YEAR FLOW



OUTFALL SECTION VIEWS



PROFILE VIEW

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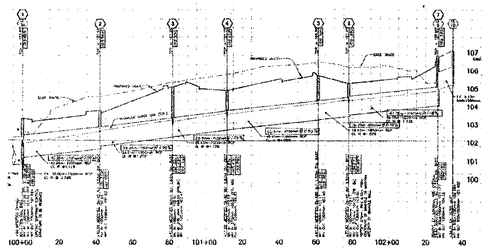
REVISION

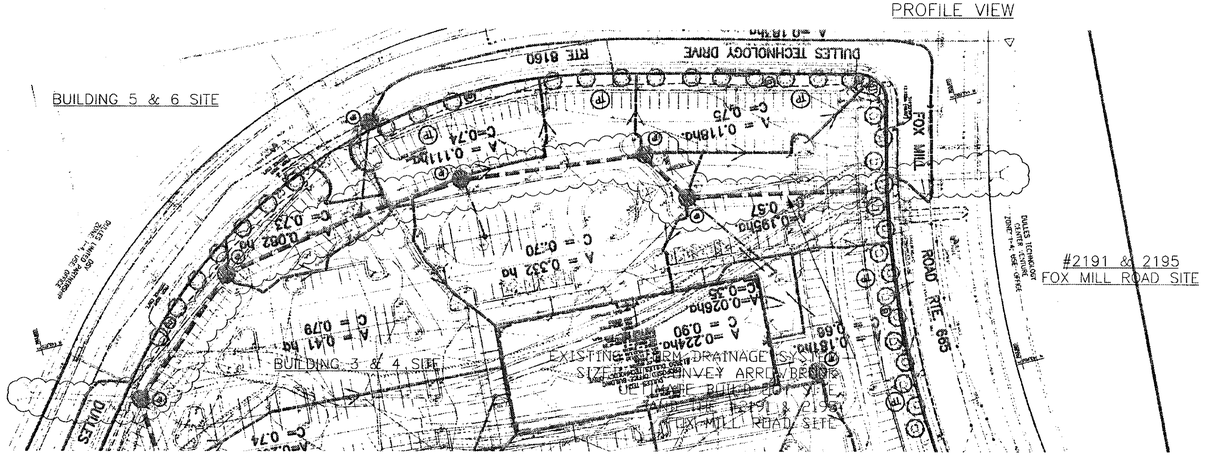
2. AREA DRAINED USE A RELEASE RATE OF APPROVED EXCEL

Up Node	Dn Node	Inlet A (ha)	C	Inlet CA (ha)	Tot CA (ha)	I (mm/hr)	Inlet Q (m³/s)	Q (m³/s)	Roughness	Size	Length (m)	Cap (m³/s)	S (%)	Velocity (m/s)	Up Invert (m)	Dn Invert (m)	Up HGL (m)	Dn HGL (m)	Rim (m)
3A	3	0.183	0.54	0.165	0.000	0.165	218.95	0.1001	0.1001	0.013	375 mm	25.31	0.4332	9.61	1.38	104.62	103.92	104.85	105.57
4A	4	0.332	0.70	0.232	0.000	0.232	194.56	0.1192	0.1192	0.013	375 mm	10.60	0.1555	0.72	1.48	103.71	103.59	103.96	104.74
6A	6	0.026	0.35	0.009	0.000	0.009	154.66	0.0047	0.0047	0.013	375 mm	31.54	0.1303	0.61	0.54	104.51	104.35	104.56	104.53	105.55
7	6	7.330	0.77	5.644	0.000	5.644	154.66	2.8942	2.8942	0.013	1050 mm	48.78	3.0250	1.13	3.46	104.22	103.67	105.16	104.51	107.00
6	5	0.195	0.67	0.131	0.000	0.131	154.66	0.0670	2.7614	0.013	1050 mm	16.62	2.8412	1.02	3.37	103.60	103.43	104.53	104.29	105.45
5	4	0.118	0.75	0.089	0.000	0.089	154.66	0.0454	2.9150	0.013	1050 mm	49.65	2.9154	1.05	3.39	103.40	102.86	104.33	103.73	105.89
4	3	0.111	0.74	0.082	0.000	0.082	171.03	0.0421	2.9380	0.013	1050 mm	29.93	3.0006	1.17	3.50	102.85	102.50	103.80	103.35	105.07
3	2	N/A	N/A	N/A	N/A	0.352	170.10	N/A	3.0001	0.013	1050 mm	39.61	3.1360	1.21	3.66	102.47	101.94	103.42	102.84	105.23
2	1	0.582	0.73	0.600	0.000	0.600	171.03	0.3067	3.0068	0.013	1200 mm	42.04	4.3006	1.12	3.08	101.83	101.36	102.78	102.13	103.94

STORM COMPUTATIONS

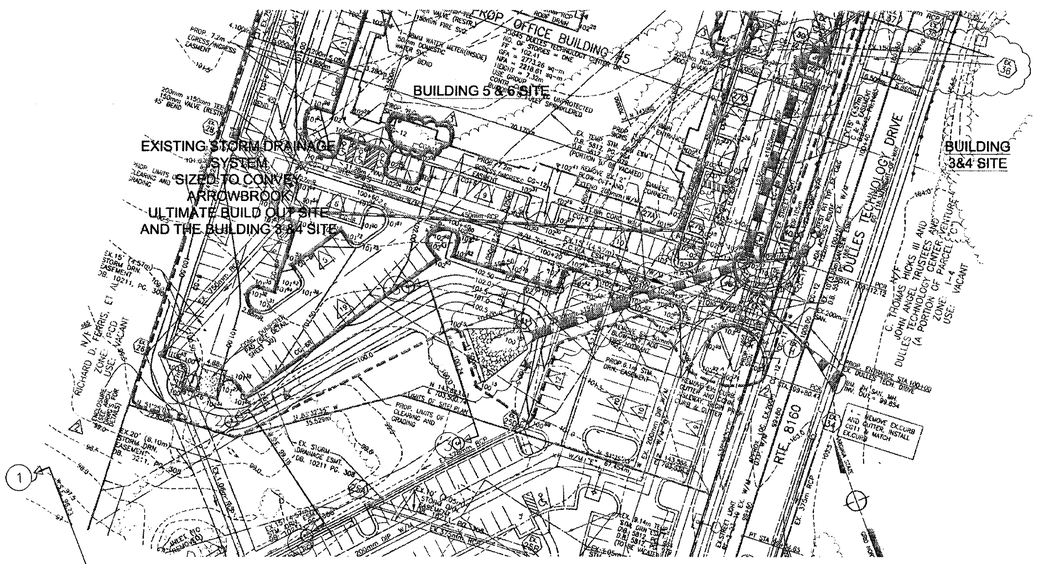


PROFILE VIEW



LAYOUT VIEW

BUILDING 3&4 SITE

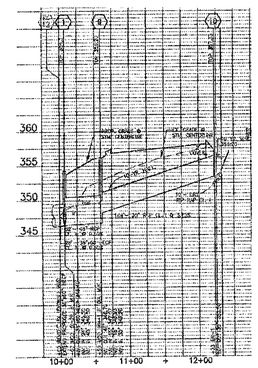


LAYOUT VIEW

BUILDING 5&6 SITE

Up Node	Dn Node	Inlet A (acres)	C	Inlet CA (acres)	Tot CA (acres)	I (in/hr)	Inlet Q (cfs)	Q (cfs)	Roughness	Size	Length (ft)	Cap (cfs)	S (ft/ft)	Velocity (fps)	Up Invert (ft)	Dn Invert (ft)	Gr Elev (ft)	Up HGL (ft)
Ex. 10A	Ex. 10	0.38	0.75	0.29	0.29	7.27	2.09	2.09	0.013	15 inch	61.00	5.23	0.003557	3.78	347.60	347.40	352.00	348.38
Ex. 1A	Ex. 11	0.17	0.57	0.10	0.10	7.27	1.06	1.06	0.013	18 inch	67.00	9.43	0.000899	0.94	348.08	347.54	352.35	349.01
SF 9"	9	0.00	0.00	0.00	0.00	7.27	0.00	0.72	0.013	18 inch	47.00	7.91	0.003105	3.60	347.17	346.03	357.00	350.58
ST1 STR. "E"	9	0.81	0.83	0.51	0.51	7.27	3.71	3.71	0.013	15 inch	94.00	4.57	0.008000	3.02	347.54	347.07	359.00	350.69
10	9	11.60	0.76	8.82	8.82	7.27	64.61	64.61	0.013	30 inch	164.00	73.91	0.031961	13.29	353.60	348.26	357.38	355.92
9	1	N/A	N/A	N/A	9.32	N/A	N/A	75.04	0.013	48 inch	52.00	101.57	0.005000	6.27	346.76	346.60	359.70	349.47
2A	2	0.49	0.70	0.34	0.34	7.27	2.51	2.51	0.013	15 inch	30.00	8.42	0.017000	2.05	347.86	347.37	353.35	350.13
SF "A"	3	0.00	0.00	0.00	0.00	7.27	0.00	9.59	0.013	21 inch	85.00	11.14	0.004941	3.99	348.63	348.24	358.60	351.11
3B	3A	0.25	0.77	0.19	0.19	7.27	1.41	1.41	0.013	15 inch	85.00	4.63	0.004923	3.28	352.56	352.23	356.76	353.03
3A	3	N/A	N/A	N/A	0.19	N/A	N/A	1.41	0.013	15 inch	178.00	7.98	0.016170	3.35	352.13	349.46	358.20	352.60
3	2	0.22	0.76	0.17	0.36	7.27	1.21	12.22	0.013	24 inch	153.00	18.05	0.008023	3.89	348.14	347.37	355.70	350.03
2	1	0.32	0.80	0.26	0.88	7.27	1.88	16.81	0.013	30 inch	153.00	29.10	0.009039	3.41	347.27	345.60	354.20	349.71
1	Ex. 11	0.18	0.84	0.15	10.49	7.27	1.11	92.78	0.013	38x60 in	38.00	163.05	0.011154	8.64	346.40	346.11	364.30	348.80
Ex. 11	Ex. 10	0.64	0.88	0.38	10.93	7.27	2.61	98.46	0.013	38x60 in	74.00	107.68	0.004886	8.20	345.81	345.46	351.69	348.83
Ex. 10	Ex. 9	0.44	0.79	0.35	11.66	7.27	2.42	100.63	0.013	38x60 in	28.00	136.86	0.007657	9.24	345.29	345.07	351.02	347.79

STORM COMPUTATIONS



PROFILE VIEW

LAYOUT VIEW

#2191 & #2195 FOX MILL ROAD SITE

Up Node	Dn Node	Inlet A (ha)	C	Inlet CA (ha)	Tot CA (ha)	I (mm/hr)	Inlet Q (m³/s)	Q (m³/s)	Size	Roughness	S (m/m)	V Avg (m/s)	Cap (m³/s)	Length (m)	Up Invert (m)	Dn Invert (m)	Up HGL (m)	Dn HGL (m)	Up Rim (m)
40A	40	0.04	0.25	0.04	0.04	0.0185	0.0185	0.0185	375 mm	0.013	0.011271	0.942	0.1925	11.200	101.500	101.176	101.560	101.858	103.400
EX 35	EX 35	17.46	0.35	6.11	6.11	3.1300	3.1300	1500 mm		0.013	0.011279	3.146	7.8614	19.280	100.721	100.513	101.838	101.255	102.870
EX 35	39	0.00	0.00	0.00	6.11	0.0000	3.1223	1500 mm		0.013	0.007063	2.874	6.2056	8.000	100.483	100.449	101.396	101.215	102.760
39	40	0.00	0.00	0.00	6.11	0.0000	3.1191	1230 x 192		0.013	0.002478	2.396	4.0384	46.000	100.420	100.308	101.321	101.070	102.360
40	41	N/A	N/A	N/A	6.15	N/A	3.1600	1230 x 192		0.013	0.002530	2.435	4.0984	46.800	100.276	100.150	101.070	100.891	102.790

STORM COMPUTATIONS

Application No. RZ 2002-HM-043 Staff A. Stinber
APPROVED DEVELOPMENT PLAN
(PCA) (CDP) (FDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 26 of 27

FDP 2002-HM-043
DC dated: 11/9/2005
PC approval: 11/30/2005

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
No. 609
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
OUTFALL EXHIBIT

DAVIS ■ CARTER ■ SCOTT
ARCHITECTURE AND INTERIOR ARCHITECTURE
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1676 International Drive, Suite 500, McLean, Virginia 22102 ■ 703.556.9275
805 Fifteenth Street, N.W., Suite 1100, Washington, D.C. 20005 ■ 202.682.2300

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LANDSAT REFERENCE DIAGRAM
Scale 1" = 800'
B C D E-F G A

DESIGN MBR	SURVEY PHR+A
DRAWN MBR	DATE APRIL, 2005
CHECKED HAC	SCALE AS NOTED
SHEET 26 OF 27	FILE NO. 09752-2-4

CO. PLAN #

OUTFALL ANALYSIS

THE NORTH OUTFALL FROM THE BIO-RETENTION FACILITY OF THE SITE OUTFALLS TO AN EXISTING STORM DRAINAGE SYSTEM, CONSTRUCTED UNDER THE #2191 & 2195 FOX MILL ROAD (AT DULLES TECH CENTER) SITE PLAN FFX# 5574-SP-05. THE TOTAL ONSITE AND OFFSITE AREA FROM THE ARROWBROOK SITE THAT REACHES THIS OUTFALL IS 10.97 AC WITH AN AVERAGE C-FACTOR OF 0.73 (SEE BMP COMPUTATIONS FOR THIS INFORMATION). THE OUFALL PIPE IS FROM STRUCTURE "10" TO "9". THE COMPUTATIONS FOR THIS PIPE IS SHOWN ON THE OUTFALL EXHIBIT SHEET FROM THE APPROVED OFFSITE PLAN. AS YOU CAN SEE FROM THE STORM DRAINAGE COMPUTATIONS HIGHLIGHTED THIS PIPE IS SIZED TO INTERCEPT 11.60 AC WITH AN AVERAGE C-FACTOR OF 0.76. THE FLOW RATE THIS PIPE IS EXPECTING IS 64.61 CFS AND IT HAS CAPACITY UP TO 73.31 CFS. WITH A 5 MINUTE TC FROM THE ARROWBROOK SITE 58 CFS IS THE MAXIMUM POSSIBLE 10 YEAR FLOW FROM THE SITE TO THIS EXISTING SYSTEM. THIS IS UNDER THE EXPECTED DESIGN FLOW FOR THIS SYSTEM AND THEREFORE THE OFFSITE SYSTEM IS SIZED TO CONVEY THE ULTIMATE BUILD OUT OF THE ARROWBROOK SITE.

THE #2191 & 2195 FOX MILL ROAD PLAN STORM SYSTEM TIES INTO THE BUILDING 3 & 4 AT DULLES TECHNOLOGY CENTER SITE PLAN FFX# 5574-SP-08 (SEE OUTFALL EXHIBIT FOR LAYOUT AND COMPUTATIONS FROM THE APPROVED PLANS). THE STORM PIPE FROM STRUCTURE "7" TO "6" CONVEYS THE FLOW FROM THE #2191 & 2195 FOX MILL PLAN AND THE RELEASE FROM THIS PLAN IS 100.95 CFS THROUGH A 38"X60" ELLIPTICAL RCP PIPE. THE BUILDING 3 & 4 SITE PLAN IS RECEIVING A FLOW AT STR. "7" ACCORDING THE STORM COMPUTATIONS ON THEIR PLAN OF 2.8942 CMS WHICH EQUATES TO 102.2 CFS. THEREFORE THE BUILDING 3 & 4 STORM SYSTEM WAS DESIGNED TO CONVEY ALL OF THE UPSTREAM FLOW AT ULTIMATE BUILD OUT.

THE BUILDING 3 & 4 STORM SYSTEM THEN TIES INTO THE CAMPUS AT DULLES TECHNOLOGY CENTER BUILDING 5 AND 6 SITE PLAN FFX# 5574-SP-07 (SEE OUTFALL EXHIBIT FOR LAYOUT AND COMPUTATIONS FROM THE APPROVED PLANS). THE STORM PIPE FORM STRUCTURE "EX.36" TO "EX. 36" CONVEYS THE FLOW FROM THE BUILDING 3 & 4 SITE PLAN AND THE RELEASE FROM THIS PLAN IS 3.0069 CMS WHICH EQUATES TO 106.2 CFS THROUGH A 48" RCP PIPE. THE BUILDING 5 & 6 PLAN IS RECEIVING THE A FLOW AT STR. "EX. 35" ACCORDING TO THEIR STORM COMPUTATIONS ON THEIR PLAN OF 3.1336 CMS WHICH EQUATES TO 110.6 CFS. THEREFORE THE BUILDING 5 & 6 STORM SYSTEM WAS DESIGNED TO CONVEY ALL OF THE UPSTREAM FLOW AT ULTIMATE BUILD OUT.

THIS SYSTEM THEN OUTFALLS THROUGH AN ENERGY DISSIPATOR AND THEN INTO AN ENGINEERED CHANNEL. THIS CHANNEL TIES INTO THE 100 YEAR FLOODPLAIN. SECTIONS FOR THE CHANNEL ARE SHOWN ON THE OUTFALL EXHIBIT SHEET AND THEY CLEARLY SHOW THAT THERE IS ADEQUATE CAPACITY FOR THE 100 YEAR STORM EVENT. THEREFORE SINCE WE HAVE DEMONSTRATED THAT THE STORM DRAINAGE SYSTEM WHICH THE ARROWBROOK SITE OUTFALLS INTO HAS ADEQUATE CAPACITY FOR THE ULTIMATE BUILD OUT OF THE SITE AND THAT THE OUTFALL CHANNEL TO THE 100 YR FLOOD PLAIN HAS CAPACITY AND HAS BEEN DESIGNED TO REDUCE HIGH VELOCITIES DUE TO ENERGY DISSIPATION MEASURES. IT IS THE ENGINEER'S OPINION THAT ADEQUATE OUTFALL CAN BE ACHIEVED.

OFFSITE POND ANALYSIS

APPROXIMATELY 1,000 FEET DOWNSTREAM FROM THE OUTFALL CHANNEL IS THE CONTROL STRUCTURE FOR THE FAIRFAX COUNTY REGIONAL POND. THE OFFSITE FAIRFAX COUNTY REGIONAL POND #H-09 INFORMATION IS SHOWN ON THIS SHEET AND WAS TAKEN FROM "THE REGIONAL STORMWATER MANAGEMENT PLAN COUNTY OF FAIRFAX DEPARTMENT OF PUBLIC WORKS, JANUARY 1989". FROM A SITE VISIT IT IS CONFIRMED THAT THIS POND HAS BEEN CONSTRUCTED. THIS POND PROVIDES SWM AND BMP FOR ITS DRAINAGE SHED. WE ARE ONLY USING THIS POND FOR SWM OF THE PORTION OF THE ARROWBROOK SITE THAT CANNOT BE CONVEYED TO THE PROPOSED ONSITE POND. BMP FOR THE ARROWBROOK SITE IS BEING HANDLED ENTIRELY ONSITE AND IS NOT UTILIZING THE OFFSITE REGIONAL POND. IF IT IS DEEMED THAT THE BMP FACILITY ONSITE CANNOT FULLY TREAT ALL THE FLOW FROM THE ARROWBROOK SITE FLOWING TO THE OFFSITE POND THEN WE WILL COMPENSATE BY UTILIZING THE BMP IN THE REGIONAL FACILITY.

TABLE 4-4

REGIONAL DETENTION BASIN H-9

LOCATION — Grid Sheet No. 15-4

Site on unnamed tributary to Merrybrook Run

Runs under Dulles Airport Access Road Toll Road

3575 feet northeast Horsepen Run

FUTURE LAND USE

Land Use	Acres	Percent
Forest/Open/Floodplain		
Large Lot Single Family		
Low Density Residential		
Medium Density Residential/Schools		
Institutional/Churches		
High Density Residential		
Industrial/Office	100	100
Commercial/Office (> 50%)		
Commercial (≤ 50%)		
TOTAL	100	100

ELEVATION-SURFACE AREA-STORAGE

Elevation (ft MSL)	Stage (ft)	Area (sq-ft)	Increm. Volume (cu-ft)	Increm. Storage (ac-ft)	Cumul. Storage (ac-ft)
300.0	0.0	0.	0.	0.0	0.0
302.5	2.5	19530.	24413.	0.6	0.6
305.0	5.0	39060.	73238.	1.7	2.2
307.5	7.5	84940.	155000.	3.6	5.8
310.0	10.0	130820.	269700.	6.2	12.0
312.5	12.5	187860.	398350.	9.1	21.1
315.0	15.0	244900.	540950.	12.4	33.6

TABLE 4-4

REGIONAL DETENTION BASIN H-9
(CONTINUED)

BASIN TYPE

Extended dry plus 10-year flood protection

ELEVATION-STORAGE REQUIREMENTS

Location	Elevation (ft MSL)	Stage (ft)	Surface Area (acres)	Storage (acre-ft)
Bottom of Dam	300.0	0.0	0.0	0.0
Water Quality Pool	307.0	7.0	1.7	5.0
Top of Dam	315.6	15.6	5.9	35.4

EMBANKMENT

Length: 310 feet
Maximum Height: 15.6 feet
Minimum Top Width: 12 feet

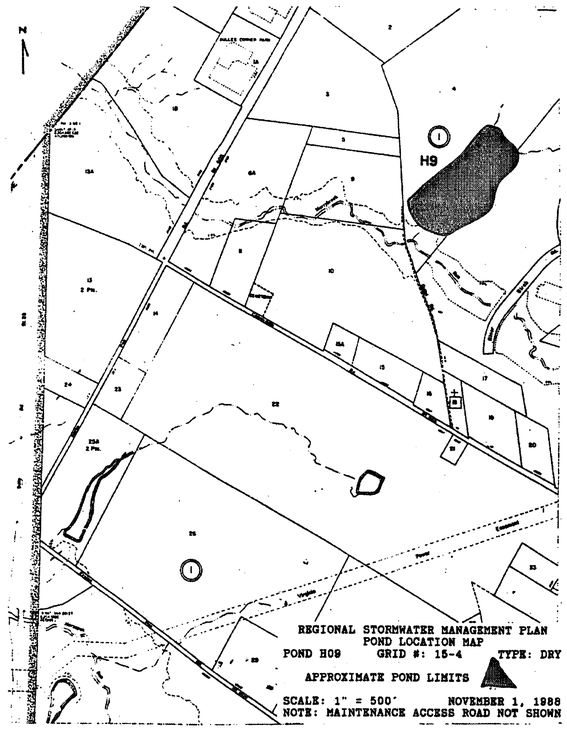
COMMENTS

Property Ownership: County

Urban Development: Site will serve existing development; 40% forest/open, 60% single family residential

Maintenance Easement: Dam site 200 feet from outlet road through woods

Utilities: None



Application No. RZ 2002-HM-043 Staff A. Shriber
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 12/5/2005
Date of (BOS) (PC) approval 12/5/2005
Sheet 27 of 27
FDP 2002-HM-043
DC dated: 11/9/2005
PC approval: 11/30/2005

NO.	DESCRIPTION	DATE	REV'D	REV'W'D	APRV'D	DATE
12	Address County Comments	10/28/05				
11	Address County Comments	10/14/05				
10	Address County Comments	8/22/05				
9	Address County Comments	7/1/05				
8	Address County Comments	6/1/05				
7	Address County Comments	4/28/05				
6	Address County Comments	4/04/05				
5	Address County Comments	1/24/05				
4	Address County Comments	6/15/04				
3	Revised Submission-1.83M SF	4/13/04				
2	Revised Submission-2.27M SF	4/25/03				
1	Initial Submission-2.56M SF	11/22/02				

REVISION

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
DAVID H. STEIGLER
No. 609
10-28-05
CERTIFIED LANDSCAPE ARCHITECT

PROJECT
CDP / FDP / PCA
ARROWBROOK CENTRE
HUNTER MILL DISTRICT
FAIRFAX COUNTY, VIRGINIA

TITLE
OUTFALL NARRATIVE & REGIONAL POND INFORMATION

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